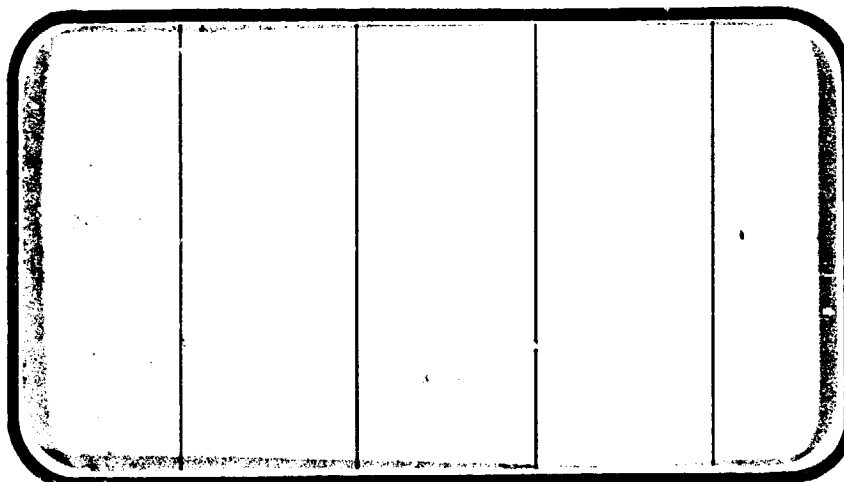


NASA

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA CR-

144589



(NASA-CR-144589) HEAT TRANSFER TESTS OF AN
0.006-SCALE THIN-SKIN SPACE SHUTTLE
THERMOCOUPLE MODEL (141-OT) IN THE LANGLEY
RESEARCH CENTER FREON TUNNEL AT M-6 (IH18)
Aerothermodynamic Data Report (Chrysler

N76-16148

HC \$16.25

Unclas

G3/18 13411

SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA Management services

SPACE DIVISION



CHRYSLER
CORPORATION

January, 1976

DMS-DR-2110
NASA CR-144,589

HEAT TRANSFER TESTS OF AN 0.006-SCALE
THIN-SKIN SPACE SHUTTLE THERMOCOUPLE
MODEL (41-OT) IN THE LANGLEY RESEARCH CENTER
FREON TUNNEL AT $M = 6$ (IH18)

by

D. G. Walstad
Rockwell International Space Division

Prepared under NASA Contract Number NAS-13247

by

Data Management Services
Chrysler Corporation Space Division
New Orleans, La. 70189

for

Engineering Analysis Division
Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL SPECIFICS:

Test Number: LaRC/CF4 #1
NASA Series Number: IH18
Model Number: 41-OT
Date: 19 Oct. 1973 through 25 Oct. 1973
Occupancy: 40 Hours

FACILITY COORDINATOR:

Bernard Spencer, Jr.
Mail Stop 163A
Langley Research Center
Langley Station
Hampton, Virginia 23665

PROJECT ENGINEERS:

D. G. Walstad
Rockwell International
Space Division
12214 Lakewood Blvd.
Mail Code AC07
Downey, California 90241

Phone: (213) 922-4600

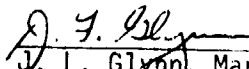
R. Midden
Langley Research Center
Bldg. 1250
Mail Stop 419A
Langley Station
Hampton, Virginia 23665

Phone: (804) 827-3031

DATA MANAGEMENT SERVICES:

Prepared by: Liaison--D. A. Sarver
Operations--M. M. Mann

Approved:


J. L. Glynn, Manager
Data Operations

Concurrence:


N. D. Kemp, Manager
Data Management Services

Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

HEAT TRANSFER TESTS OF AN 0.006-SCALE
THIN-SKIN SPACE SHUTTLE THERMOCOUPLE
MODEL (41-OT) IN THE LANGLEY RESEARCH CENTER
FREON TUNNEL AT $M = 6$ (IH18)

By D. G. Walstad, Rockwell International Space Division

ABSTRACT

Heat transfer tests were conducted at Langley Research Center, Freon Facility, using a thin-skin thermocouple Orbiter and tank, model (41-OT). The purpose of these tests was to obtain ascent heating data at conditions simulating real gas effects at hypersonic Mach numbers. The configurations tested were Orbiter alone, external tank alone, and mated Orbiter and external tank. A boundary layer trip investigation was conducted for all configurations. The test was conducted at Mach 6 and Reynolds number of 0.5×10^6 per foot for 0° and -5° angle-of-attack.

Selected thermocouples were chosen from the Orbiter and external tank to be used for obtaining heat transfer measurements. A maximum of 42 thermocouples could be measured by the facility data acquisition at one time and no attempt was made to record the excess thermocouples located on the model.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
INDEX OF MODEL FIGURES	2
INDEX OF DATA FIGURES	3
INTRODUCTION	6
NOMENCLATURE	7
CONFIGURATIONS INVESTIGATED	10
MODEL INSTRUMENTATION	12
TEST FACILITY DESCRIPTION	13
TEST PROCEDURE	15
DATA REDUCTION	17
TABLES	
I. TEST CONDITIONS	19
II. DATA SET/RUN NUMBER COLLATION SUMMARY	20
III. COMPONENT DIMENSIONAL DATA	22
IV. ORBITER THERMOCOUPLE LOCATIONS	30
V. EXTERNAL TANK THERMOCOUPLE LOCATIONS	31
FIGURES	
MODEL	32
DATA	37
APPENDIX	
TABULATED SOURCE DATA	

INDEX OF MODEL FIGURES

Figure	Title	Page
1.	Model instrumentation.	
a.	41-OTS 0.006-scale Orbiter thermocouple locations	32
b.	41-OTS 0.006-scale external tank thermocouple locations	33
2.	Model specific heat.	34
3.	Typical model installation photograph at $\alpha = 0^\circ$.	35

INDEX OF DATA FIGURES

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	CONDITIONS VARYING	PAGES
4	ORBITER ALONE - BODY DATA - NO TRIPS	A	Y(BP), HAW/HT, ALPHA	1-10
5	ORBITER ALONE - BODY DATA - SMALL TRIPS	A	Y(BP), HAW/HT, ALPHA	11-20
6	ORBITER + ET - BODY DATA - NO TRIPS	A	Y(BP), HAW/HT, ALPHA	21-30
7	ORBITER + ET - BODY DATA - LARGE TRIPS	A	Y(BP), HAW/HT	31-33
8	ORBITER + ET - BODY DATA - SMALL TRIPS	A	Y(BP), HAW/HT, ALPHA	34-43
9	ORBITER ALONE - WING DATA - NO TRIPS	B	2Y/B, HAW/HT, ALPHA	44-55
10	ORBITER ALONE - WING DATA - SMALL TRIPS	B	2Y/B, HAW/HT, ALPHA	56-67
11	ORBITER + ET - WING DATA - NO TRIPS	B	2Y/B, HAW/HT, ALPHA	68-79
12	ORBITER + ET - WING DATA - LARGE TRIPS	B	2Y/B, HAW/HT	80-82
13	ORBITER + ET - WING DATA - SMALL TRIPS	B	2Y/B, HAW/HT, ALPHA	83-94
14	ET ALONE - NO TRIPS	A	PHI, HAW/HT, ALPHA	95-112
15	ET ALONE - SMALL TRIPS	A	PHI, HAW/HT, ALPHA	113-130
16	ORBITER + ET - ET DATA - NO TRIPS	A	PHI, HAW/HT, ALPHA	131-148
17	ORBITER + ET - ET DATA - LARGE TRIPS	A	PHI, HAW/HT	149-151
18	ORBITER + ET - ET DATA - SMALL TRIPS	A	PHI, HAW/HT, ALPHA	152-169
19	ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS	C	X/L, HAW/HT, ALPHA	170-239

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	CONDITIONS VARYING	PAGES
20	ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS	C	X/L, HAW/HT, ALPHA	240-309
21	ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS	C	X/L, HAW/HT, ALPHA	310-379
22	ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS	C	X/L, HAW/HT	380-391
23	ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS	C	X/L, HAW/HT, ALPHA	392-461
24	INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS	D	Y(BP), HAW/HT, ALPHA	462-467
25	INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS	D	Y(BP), HAW/HT, ALPHA	468-473
26	INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS	E	2Y/B, HAW/HT, ALPHA	474-479
27	INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS	E	2Y/B, HAW/HT, ALPHA	480-485
28	INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS	D	PHI, HAW/HT, ALPHA	486-491
29	INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS	D	PHI, HAW/HT, ALPHA	492-497
30	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ORBITER BODY - NO TRIPS	D	Y(BP), HAW/HT, ALPHA	498-501

INDEX OF DATA FIGURES (Concluded)

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	CONDITIONS VARYING	PAGES
31	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ORBITER BODY - SMALL TRIPS	D	Y(BP), HAW/HT, ALPHA	502-505
32	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ORBITER WING - NO TRIPS	E	2Y/B, HAW/HT, ALPHA	506-511
33	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ORBITER WING - SMALL TRIPS	E	2Y/B, HAW/HT, ALPHA	512-517
34	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS	D	PHI, HAW/HT, ALPHA	518-529
35	COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS	D	PHI, HAW/HT, ALPHA	530-541

COEFFICIENT SCHEDULES:

- (A): H/HREF versus X/L
- (B): H/HREF versus X/C
- (C): H/HREF versus PHI
- (D): HI/HU versus X/L
- (E): HI/HU versus X/C

INTRODUCTION

The experimental investigation documented in this report was performed to obtain aerodynamic heat-transfer rate data on the space shuttle vehicle. A component build-up of the orbiter alone, tank alone, and orbiter plus tank was utilized to investigate the component interference effects.

The test program was conducted in the Langley Research Center Freon Tunnel at Mach 6.0 and nominal free-stream Reynolds number per foot of 0.5×10^6 . The model angles-of-attack tested were 0° and -5° .

NOMENCLATURE

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
b		model skin thickness, in.
c		specific heat of model material, BTU/lbm-°R
c _p		specific heat at constant pressure of airstream, BTU/lbm-°R
Δh	DELTAH	separation distance between upper surface of external tank and lower surface of orbiter, in.
g		gravitational acceleration, ft/sec ²
h	H	heat-transfer coefficient, BTU/ft ² -sec
h _{ref}	HREF	reference heat transfer coefficient, stagnation value on scaled one-foot sphere, BTU/ft ² -sec
h/h _{ref}	H/HREF	ratio of model heat-transfer coefficient to heat-transfer coefficient of reference sphere for $H_{aw}/H_t = X.XXX$
	HI/HU	interference to undisturbed heat transfer coefficient ratio
L		model reference length
H		enthalpy, BTU/lb
H _{aw}		adiabatic wall enthalpy, BTU/lb
H ₀	H0	stagnation enthalpy, BTU/lb
k		thermal conductivity coefficient, BTU/ft-sec-°R
M	MACH	Mach number
P		static pressure, psia
P ₀	P0	stagnation pressure, psia
P _{t2}	PT2	total pressure behind the shock, psia

NOMENCLATURE (Continued)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
Pr		Prandtl number
\dot{q}	QDOT	heat flux, BTU/ft ² -sec
\dot{q}_{ot}		stagnation-point heat-transfer rate calculated using Fay and Riddell's equation, BTU/(ft ²) (sec)
r_s		radius of scaled one-ft sphere, in.
r		adiabatic wall temperature ratio, T_{aw}/T_o
R		gas constant, ft-lb/slug-°R
Re		Reynolds number
Re/ft	RN/L	unit Reynolds number, 1/ft
t		time, sec
T_o	TO	temperature, °R
T_{aw}	TAW(TCAL)	tunnel wall temperature, °R(°F)
T/C	T/CNO	thermocouple
u	V	velocity, ft/sec
W		density of model material, lbm/ft ³
x		axial distance coordinate, ft
	X/C	chordwise location, fraction of local chord
	X/L	longitudinal location, fraction of body length
	X/HT	diameter of steel balls used for transition strip, in.
Y		spanwise distance from centerline
2y/b	2Y/B	spanwise location

NOMENCLATURE (Concluded)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
	$Y(BP)$	lateral distance from centerline
α	ALPHA	model angle of attack, deg
β	BETA	model angle of sideslip, degrees
μ		viscosity of air, lb-sec/ft ²
ρ		density of air, slug/ft ³
ϕ	PHI	external tank radial position measured clockwise looking forward. 0 degrees at bottom centerline

SUBSCRIPTS

aw	adiabatic wall
m	measured
o	tunnel stagnation conditions
t	theoretical
w	model wall conditions
'	primed quantities which indicate conditions behind normal shock
∞	tunnel free-stream conditions

CONFIGURATIONS INVESTIGATED

The Orbiter was an 0.006-scale representation of the modified VL70-00089B lines. The Orbiter main body was defined by Grumman drawing SS-H-00326-11. The Orbiter nose was defined by Grumman drawing SS-H-000326-15. Radii of 0.900 inch were provided at the left-hand and right-hand double delta wing junctures. The external tank was defined by the VL72-000061C configuration drawing.

The Orbiter was a full-span configuration, Stycast-type model (Grumman Material "G"). Thin-skin thermocouple instrumented inserts were located on the Orbiter underside centerline region, left-hand wing underside, and left-hand windshield.

The external tank (ET) and left-hand solid rocket booster (SRB) were constructed of thin-skin (nominal skin thickness of 0.040 in) 15-5 PH stainless steel.

The Orbiter had no provisions for elevon, rudder, or bodyflap deflections.

All thermocouple leads were spot welded to the skin and clamped in bundles at convenient locations within the models.

Transition Strip Location

Steel balls with a nominal diameter of 0.0312 inch were spot welded to a thin nichrome strip with a spacing between balls of 3 diameters from center to center. These strips were then attached to the Orbiter and external tank in the following locations: a) Orbiter: 1.1 inches aft of nose, b) External tank: 1.5 inches aft of nose.

CONFIGURATIONS INVESTIGATED (Concluded)

<u>Symbol</u>	<u>Description</u>
B ₁₀	Fuselage. 2A Configuration lightweight Orbiter per -89B lines
C ₅	Orbiter canopy for lightweight Orbiter, used with fuselage, B ₁₀
D ₇	Manipulator arm housing per -93 lines, used with fuselage, B ₁₀
F ₄	Aft body flap, used with fuselage, B ₁₀
M ₃	OMS pods
T ₈	External oxygen-hydrogen tank
V ₅	Centerline vertical tail, double wedge airfold with rounded leading edge
W ₈₇	Orbiter wing per-93 lines, used with fuselage B ₁₀

MODEL INSTRUMENTATION

The Orbiter and external tank were instrumented with a total of 168 iron-constantan thermocouples. However, only 42 were used during the test due to data system limitations. All thermocouples were spot welded to thin skin stainless steel. The thermocouple leads were approximately 50 feet long and all were fitted with plugs. Prior to testing, the thermocouples were checked with a heat source to assure proper hook-up, polarity, and response. The exact location of each thermocouple is presented in Tables IV and V, and illustrated in figures 1a and 1b.

TEST FACILITY DESCRIPTION

The Hypersonic CF_4 tunnel is a blow-down type facility with a maximum run time of 60 seconds. The test medium is CF_4 (Freon 14).

The system consists of a high-pressure storage field, pressure regulator, lead bath heaters, nozzle, test section, and vacuum spheres.

The bottle field consists of three 30-ft³ storage bottles which store the gas at pressures up to 5000 psi.

The lead bath heaters consist of two tanks which contain 20,000 lb of molten lead each. Gaseous CF_4 is transported from the bottle field to the settling chamber by a series of stainless-steel tubes immersed in the molten lead. The lead is heated by means of thermostatically controlled electric heaters which are also immersed in the molten lead. The temperature range over which the lead bath heaters will operate is 700 to 1200°F. The piping between the lead bath heaters and the settling chamber are also heated by means of electric strip heaters.

The nozzle is axisymmetrically-contoured with a design Mach number of 6. The nozzle will operate over a pressure range from 1000 to 2500 psia. The nozzle diameter is 20 inches and has a test core approximately 15 inches in diameter.

The test section is a 5-foot diameter tank approximately 6 feet long with observation windows on two sides and on top. The test section contains a model insertion mechanism which inserts and retracts the model from the test stream during a run. This mechanism is also capable of changing the model angle of attack from -15° to +15°.

TEST FACILITY DESCRIPTION (Concluded)

The vacuum system consists of three spheres with a total volume of 80,000 ft³ with vacuum pumps capable of pumping the spheres down to a pressure of 1/2 mm Hg.

The tunnel is operated by setting the desired run pressure on the regulator, opening the test section to the vacuum spheres, and opening the main isolation valve. When the flow is established (approximately 2 seconds) the model is inserted into the test stream for the desired run time and then retracted. The tunnel is shut down by closing the main isolation valve.

Data system--Instrumentation is available to handle 45 channels of strain gage type transducers or 42 channels of thermocouples. The data acquisition system is capable of recording 45 channels of data on magnetic tape. The sampling rate is 400 bits per second. An additional 50 channels of data can be recorded on strip-chart type recorders.

TEST PROCEDURE

Heat transfer data was computed from the temperature history measured by 42 iron-constantan thermocouples located on the model. The model was injected into the flow stream from the bottom of the test section and held on tunnel center line for approximately 4 seconds. During these 4 seconds, temperature measurements were recorded. The model was then retracted from the test section and the tunnel was shut down.

The model was leveled in pitch and roll before each run by means of a leveling block which attached to the top of the Orbiter. An inclinometer was applied directly to the external tank surface when leveling the external tank alone configuration. The external tank was positioned in roll by lining up scribe lines on the sting and the attachment bracket.

When testing Orbiter or external tank alone, the model component not being tested was placed at the base of the model strut and secured. The model moved up and down with the injection system but never into the flow stream. No component ever had to be removed from the test section, or thermocouple plugs disconnected by doing this.

A total of 168 thermocouples were available on the Orbiter and external tank. Because of data system limitations, only a maximum of 42 thermocouples could be recorded at any one time. During any run, the remainder of the thermocouples not going directly into the data acquisition system were recorded by oscillographs to be used as backup data.

Prior to testing, all thermocouples were checked (with a heat source), through the data acquisition system, for proper response and location.

TEST PROCEDURE (Concluded)

As an aid in making this check, fiberglass masks with thermocouple locating holes in them were provided for the Orbiter and external tank. By placing the masks on the model and applying the tip of a soldering iron to the hole, any thermocouple could be identified immediately. During the test, and at random, selected thermocouples were spot checked to assure their continued response.

On line data in the form of temperature-time tabulations was available for monitoring during the test.

DATA REDUCTION

Equations and Constants:

The thermocouple heat transfer data was reduced by use of the one-dimensional thin wall equation:

$$\dot{q} = Wcb \frac{dT_w}{dt}, \quad \text{BTU/ft}^2\text{sec} \quad (1)$$

where the symbols are defined in the Nomenclature section.

The theoretical stagnation-point heat transfer rate was calculated with Fay and Riddell's equation:

$$\dot{q}_{ot} = 0.94 (\rho_w u_w)^{0.5} (\rho_o u_o / \rho_w u_w)^{0.4} (H_o - H_w) (du/dx)^{0.5} \quad (2)$$

where

$$\mu = \frac{0.0232 \times 10^{-6} T^{0.5}}{1 + (220/T)}$$

and
$$\frac{du}{dx} = (1/r_s) [2 RT(1 - P_\infty/P_o)]^{0.5}$$

The local heat-transfer coefficient for each thermocouple was calculated by:

$$h_{local} = \frac{\dot{q}}{rT_o - T_w} \quad (3)$$

at $r = 1.0, 0.9, 0.85$.

The ratio of the local heat-transfer coefficient to the reference heat transfer coefficient for each thermocouple was calculated by:

$$\frac{h_{local}}{h_{ref}} \quad (4)$$

DATA REDUCTION (Concluded)

where

$$h_{\text{ref}} = \frac{\dot{q}_{\text{ot}}}{T_o - T_w}$$

TABLE I.

[illegible]

LATE: OCT., 1973

Φ: B = ORBITER FUELAGE
C = ORBITER CARGO
W = ORBITER WEIGHT
T = EXTERNAL TANK

[illegible]

TABLE III - COMPONENT DIMENSIONAL DATA

Model Component: Body (B₁₀)

General Description: Fuselage, 2A configuration lightweight orbiter,
per Rockwell lines VL70-000089B

Model Scale = 0.00593

Drawing Number: VL70-000089B, VL70-000092, 93, 94A

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Length ~ in.	<u>1328.3</u>	<u>7.87682</u>
Max width ~ in. (at X ₀ = 1528.3)	<u>265.0</u>	<u>1.57145</u>
Max depth ~ in. (at X ₀ = 1480.52)	<u>243.0</u>	<u>1.47064</u>
Fineness ratio	<u>5.012</u>	<u>5.012</u>
Area ~ ft ²		
Max cross-sectional	<u>456.4</u>	<u>0.01605</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III - (Cont.)

Model Component: Canopy (C₅)

General Description: Orbiter canopy for lightweight orbiter configuration

Model Scale = 0.00593

Drawing Number: VL-70-000092

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Sta fwd bulkhead ~ in.	<u>391.0</u>	<u>2.31863</u>
Sta TE ~ in.	<u>560.0</u>	<u>3.32080</u>
Canopy/body intersection ~ in.	<u>391.0</u>	<u>2.31863</u>
	<u> </u>	<u> </u>
	<u> </u>	<u> </u>
	<u> </u>	<u> </u>
	<u> </u>	<u> </u>
	<u> </u>	<u> </u>

TABLE III - (Cont.)

Model Component: Manipulator Housing (D₇)

General Description: 2A configuration per Rockwell lines VL70-000093

Model Scale = 0.00593

Drawing Number: VL70-000093, SS-A-00092

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Length ~ in.	<u>881.0</u>	<u>5.22433</u>
Max width ~ in.	<u>51.0</u>	<u>0.30243</u>
Max depth ~ in.	<u>23.0</u>	<u>0.13639</u>
Fineness ratio	<u>-</u>	<u>-</u>
Area ~ ft ²		
Max cross-sectional	<u>-</u>	<u>-</u>
Planform	<u>-</u>	<u>-</u>
Wetted	<u>-</u>	<u>-</u>
Base	<u>-</u>	<u>-</u>

Location at:

⊕ Fuselage BP = 0.0
 WP = 500.0 in. FS
 X₀ 426.0 to X₀ 1307.0 in. FS

TABLE III - (Cont.)

Model Component: Body Flap (F4)

General Description: Aft body flap used on lightweight orbiter configuration

Model Scale = 0.00593

Drawing Number: VL-70-000094A, SS-A-00092

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Length ~ in.	<u>84.70</u>	<u>0.50227</u>
Max width ~ in.	<u>265.00</u>	<u>1.57145</u>
Max depth ~ in.	<u>-</u>	<u>-</u>
Fineness ratio	<u>-</u>	<u>-</u>
Area ~ ft ²		
Max cross-sectional	<u>-</u>	<u>-</u>
Planform	<u>142.64</u>	<u>0.00502</u>
Wetted	<u>-</u>	<u>-</u>
Base	<u>38.65</u>	<u>0.00136</u>

TABLE III - (Cont.)

Model Component: OMS Pod (M₃)

General Description: 2A lightweight orbiter configuration per Rockwell
lines VL70-000094A

Drawing Number: VL70-000094A, SS-A-00092

Dimensions:	Full-Scale	Model Scale
Length ~ in.	346.0	2.05178
Max width ~ in. at X _O 1450.0	108.0	0.64044
Max depth ~ in. at X _O 1500.0	113.8	0.67483
Fineness ratio	-	-
Area ~ ft ²		
Max cross-sectional	-	-
Planform	-	-
Wetted	-	-
Base	-	-

℄ of OMS pod

Z_O = 463.9 in. FS: WP 400 + 63.9 = 463.9 in. FS

Y_O = 80.0 in FS

Length: X_O1214.0 to X_O1560.0 = 346.0 in. FS

TABLE III - (Cont.)

Model Component: External Tank (T8)

General Description: External oxygen-hydrogen tank lightweight orbiter configuration to which the orbiter and the two solid rocket motors attach

Model Scale = 0.00593

Drawing Number: VL-70-000061C, VL-78-000018, SS-A-00093

Dimensions:	Full-Scale	Model Scale
Length ~ in. (nose at $X_T = 185.0$)	<u>1989.0</u>	<u>11.79477</u>
Max width (dia), in.	<u>324.0</u>	<u>1.92132</u>
Max depth ~ in.	<u>-</u>	<u>-</u>
Fineness ratio	<u>6.1389</u>	<u>6.1389</u>
Area ~ ft ²		
Max cross-sectional	<u>572.56</u>	<u>0.02013</u>
Planform	<u>-</u>	<u>-</u>
Wetted	<u>-</u>	<u>-</u>
Base	<u>-</u>	<u>-</u>
WP of tank centerline, (Z _T) in.	<u>400.0</u>	<u>2.3720</u>

TABLE III - (Cont.)

Model Component: Vertical (V5)--Lightweight Orbiter ConfigurationGeneral Description: Centerline vertical tail, double-wedge airfoil with rounded leading edge

Model Scale = 0.00593

Drawing Number: VL-70-000095, SS-A-00092

Dimensions:

Total Data

	Full-Scale	Model Scale
Planform area (theo) ~ ft ²	413.25	0.01453
Span (theo) ~ in.	315.72	1.87222
Aspect ratio	1.675	1.675
Rate of taper	0.507	.507
Taper ratio	0.404	.404
Sweepback angles ~ deg		
Leading edge	45.000	45.000
Trailing edge	26.249	26.249
0.25 element line	41.130	41.130
Chords ~ in.		
Root (theo) WP	268.50	1.59220
Tip (theo) WP	108.47	0.62323
MAC	199.81	1.18487
Fus sta of 0.25 MAC	1463.50	8.67856
WP of 0.25 MAC	635.52	3.76863
BL of 0.25 MAC	0.0	0.0
Airfoil section		
Leading edge angle ~ deg	10.00	10.00
Trailing edge angle ~ deg	14.92	14.92
Leading edge radius ~ in.	2.00	0.01186
Void area ~ ft ²	13.17	0.00046
Blanketed area ~ ft ²	12.67	0.00045

TABLE III - Concluded.

Model Component: Wing (W) / Lightweight Orbiter

General Description: Orbiter configuration per Rockwell lines V170-000093 Note: Dihedral angle is defined at the lower surface of the wing at the 75.33-percent element line projected into a plane perpendicular to the FRL. Model Scale = 0.00593

Test No. Drawing No. V170-000093

Dimensions:	Full-Scale	Model Scale
Total Data		
Planform area (theo) - ft ²	2690.0	0.00459
Span (theo) - in.	936.682	5.55152
Aspect ratio	2.265	2.265
Rate of taper	1.177	1.177
Taper ratio	0.200	0.200
Dihedral angle, - deg	3.500	3.500
Incidence angle, - deg	3.000	3.000
Aerodynamic twist, - deg	+3.000	+3.000
Sweepback angles, - deg		
Leading edge	45.000	45.000
Trailing edge	10.24	10.24
0.25 element line	35.209	35.209
Chords - in.		
Root (theo) at BP 0.0	689.24	4.08919
Tip (theo) at BP	137.85	0.81745
MAC	474.81	2.81562
Fus sta of 0.25 MAC	1136.89	6.74176
WP of 0.25 MAC	299.20	1.77426
BL of 0.25 MAC	182.13	1.08003
Exposed Data		
Area (theo) - ft ²	1752.29	0.06162
Span (theo) - in. (BP 108.0 to	720.68	4.27363
Aspect ratio	2.058	2.058
Taper ratio	0.2451	0.2451
Chords - in.		
Root at BP 108.0	562.40	3.32503
Tip at $1.00 \frac{b}{2}$	137.85	0.81745
MAC	393.03	2.35067
Fus sta of 0.25 MAC	1185.31	7.02882
WP of 0.25 MAC	300.20	1.78019
BL of 0.25 MAC	143.76	0.85250
Airfoil section (Rockwell mod NASA XXXX-64)		
t/c at Root $\frac{b}{2}$ = 0.25	0.10	0.10
t/c at Tip $\frac{b}{2}$ = 1.00	0.12	0.12
Data for 1 of 2 sides		
Leading edge cuf		
Planform area - ft ²	120.33	0.00423
Leading edge intersects fus ML at sta - in.	560.0	3.32080
Leading edge intersects wing at sta - in.	1035.0	6.13755

TABLE IV

Orbiter Thermocouple Location

T/C No.	Skin Thick	Location		Remarks	T/C No.	Skin Thick	Location		Remarks
		$y = b/2$	$x/t - x/c$				$y = b/2$	$x/t - x/c$	
1	.033	$y = .047$	.154	Windshield	23	.0285	$y = .415$	.350	Fuselage
2	.031	$y = .047$	.161		24	.0285		.375	
3	.034	$y = .047$	.169		25	.0315		.400	
4	.0375	$y = .213$	.159		26	.0325		.500	
5	.0375	$y = .196$	.166		27	.0320		.600	
6	.0335	$y = .178$	.172		29	.0325		.800	
7	.033	$y = 0$	.0875	Fuselage	31	.0315		1.00	
8	.032		.100		32	.0315	$b/2 = .40$	.225	Wing
9	.031		.125		33	.033		.250	
10	.0305		.150		35	.033		.400	
11	.030		.175		37	.032		.600	
12	.031		.200		39	.0315		.800	
13	.0295		.250		41	.034	$b/2 = .60$	.175	
14	.0295		.300		42	.032		.200	
15	.0295		.400		44	.033		.400	
16	.0302		.500		46	.032		.600	
17	.0312		.600		48	.031		.800	
18	.0315		.700		50	.035	$b/2 = .80$	.250	
19	.031		.800		52	.033		.400	
20	.0295		.900		54	.032		.600	
21	.030	$y = 0$	1.00	Fuselage	56	.0335	$b/2 = .80$	.800	Wing

TABLE V

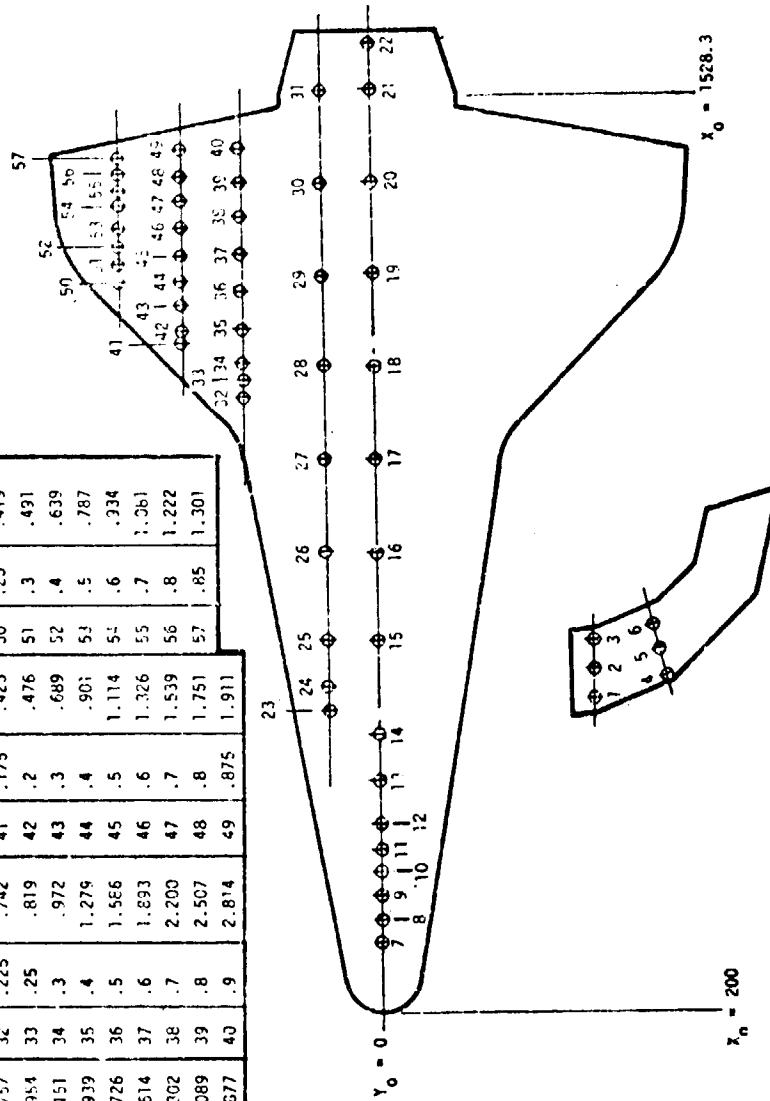
External Tank Thermocouple Location

T/C No.	Skin Thick	Location		T/C No.	Skin Thick	Location		T/C No.	Skin Thick	Location	
		x/l	ϕ			x/l	ϕ			x/l	ϕ
1	.037	0	Nose	35	.033	.400	112.5°	62	.033	.600	157.5°
2	.030	.005	180°	36	.033	.400	90°	63	.031	.600	135°
3	.030	.010		40	.032	.425	180°	64	.031	.600	112.5°
4	.030	.020		41	.032	.450	180°	65	.031	.600	90°
6	.030	.060		43	.031	.450	135°	66	.031	.600	67.5°
8	.029	.100		46	.033	.475	180°	70	.033	.650	180°
10	.028	.150		47	.033	.500	180°	77	.033	.700	180°
12	.028	.200		48	.033	.500	157.5°	79	.032	.700	135°
14	.032	.250		49	.032	.500	135°	81	.030	.700	90°
18	.034	.300		50	.033	.500	112.5°	90	.033	.800	180°
25	.032	.350		51	.031	.500	90°	92	.032	.800	135°
30	.034	.375		54	.032	.525	180°	94	.031	.800	90°
32	.033	.400	↓	55	.032	.550	180°	103	.033	.900	180°
34	.032	.400	135°	61	.032	.60	180°	111	.033	.974	180°

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

WATERSHIELD

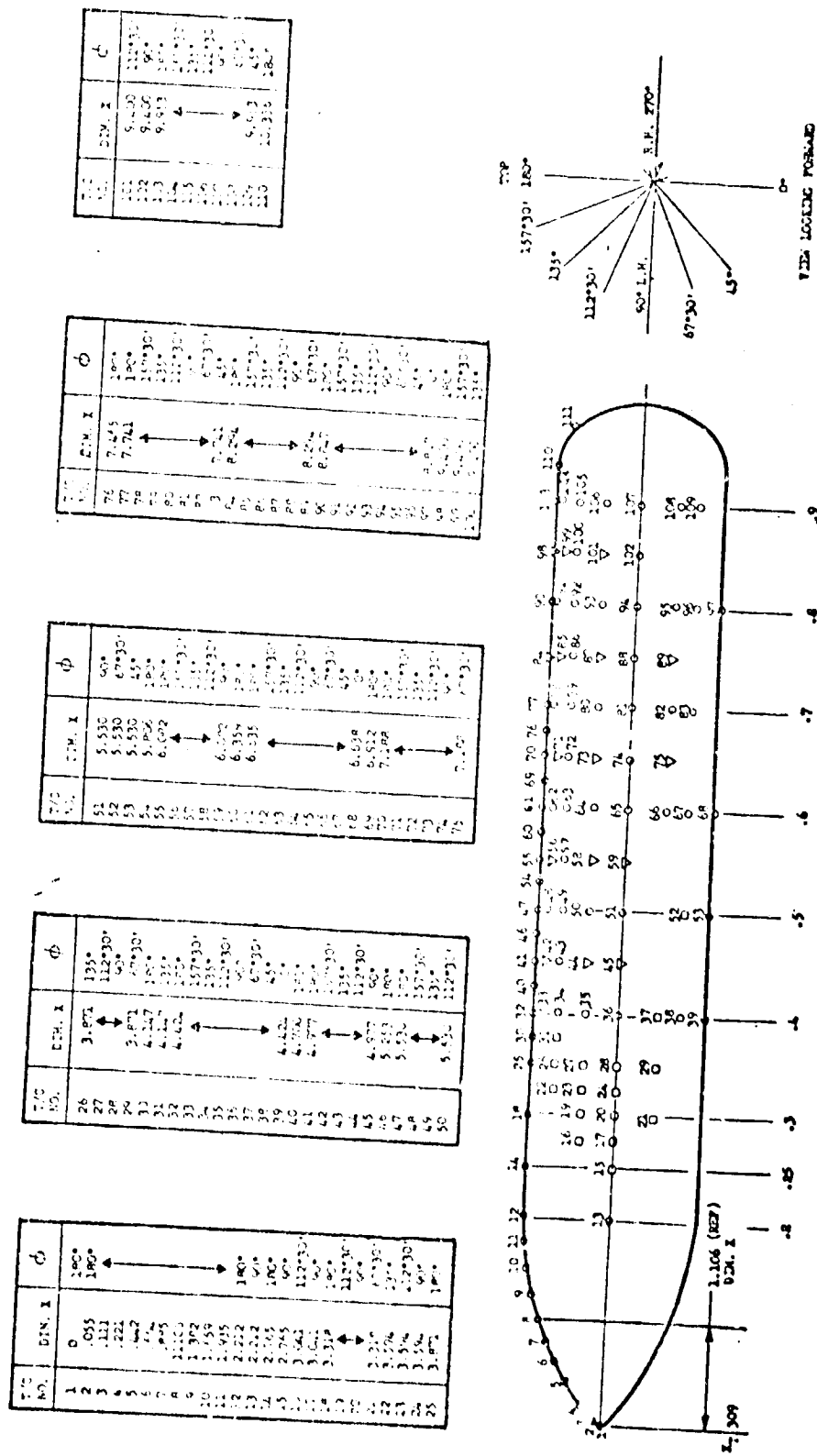
WATERSHIELD		Y ₀ = 0		BP 70		.4 b/2		.6 b/2		.8 b/2	
		Y = .415		Y = 1.111		Y = 1.667		Y = 2.222		Y = 2.222	
NO.	Y	DIST. FROM X ₀ 200	X/L	NO.	X/L	DIST. FROM X ₀ 200	X/C	NO.	X/C	DIST. FROM L.E.	X/C
1	.047	1.210	.0875	23	.35	2.757	.32	41	.175	.423	.25
2	.047	1.272	.100	24	.375	2.954	.33	42	.2	.476	.3
3	.047	1.314	.125	25	.4	3.151	.34	43	.3	.689	.4
4	.213	1.251	.150	26	.5	3.939	.35	44	.4	.901	.5
5	.196	1.305	.175	27	.6	4.726	.36	45	.5	1.114	.6
6	.178	1.358	.20	28	.7	5.514	.37	46	.6	1.326	.7
			.25	29	.8	6.302	.38	47	.7	1.539	.8
			.3	30	.9	7.089	.39	48	.8	1.751	.85
			.4	31	1.0	7.877	.40	49	.875	1.911	1.301
			.5								
			.6								
			.7								
			.8								
			.9								
			1.0								
			1.025								

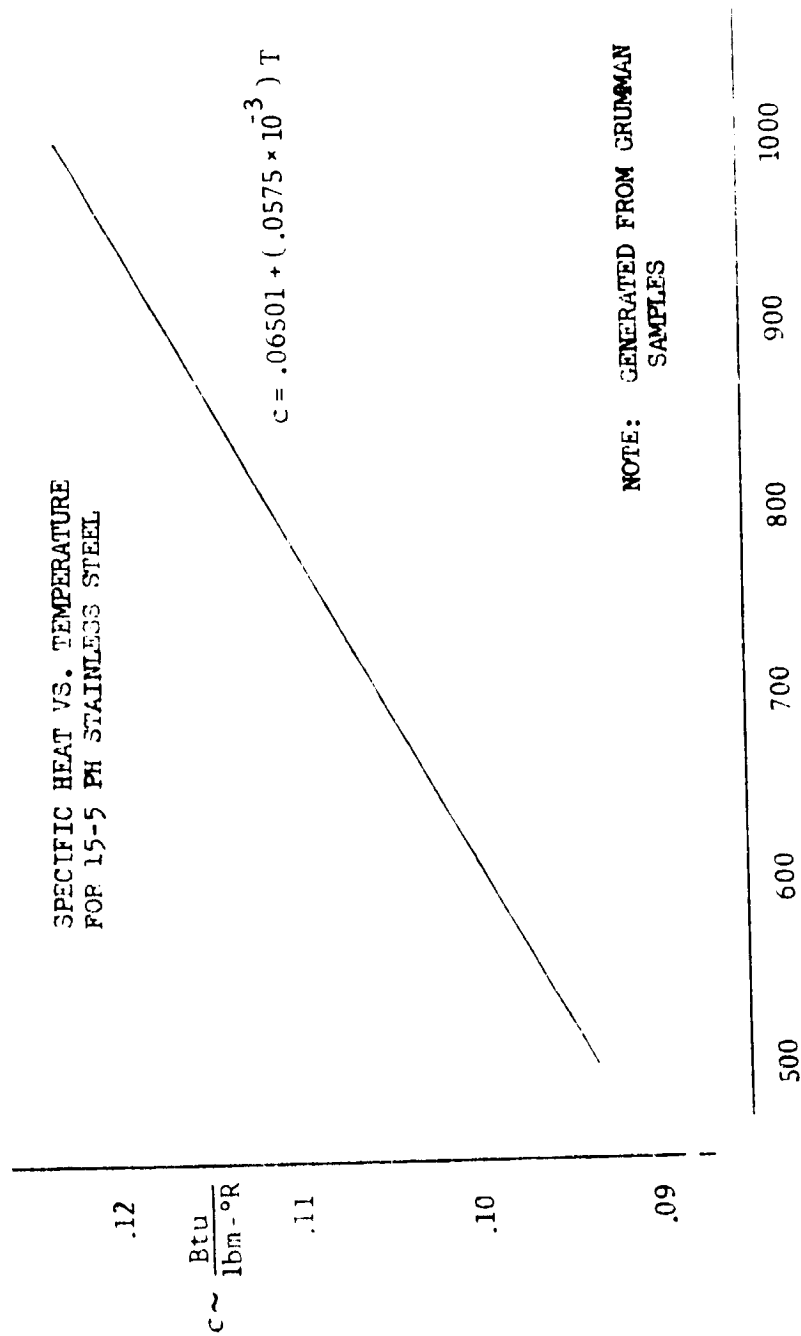


NOTE: See Table IV for thermocouples used

a. 41-OTS .006-scale Orbiter thermocouple locations

Figure 1. - Model instrumentation.





T, Temperature - °R

Figure 2. - Model specific heat.

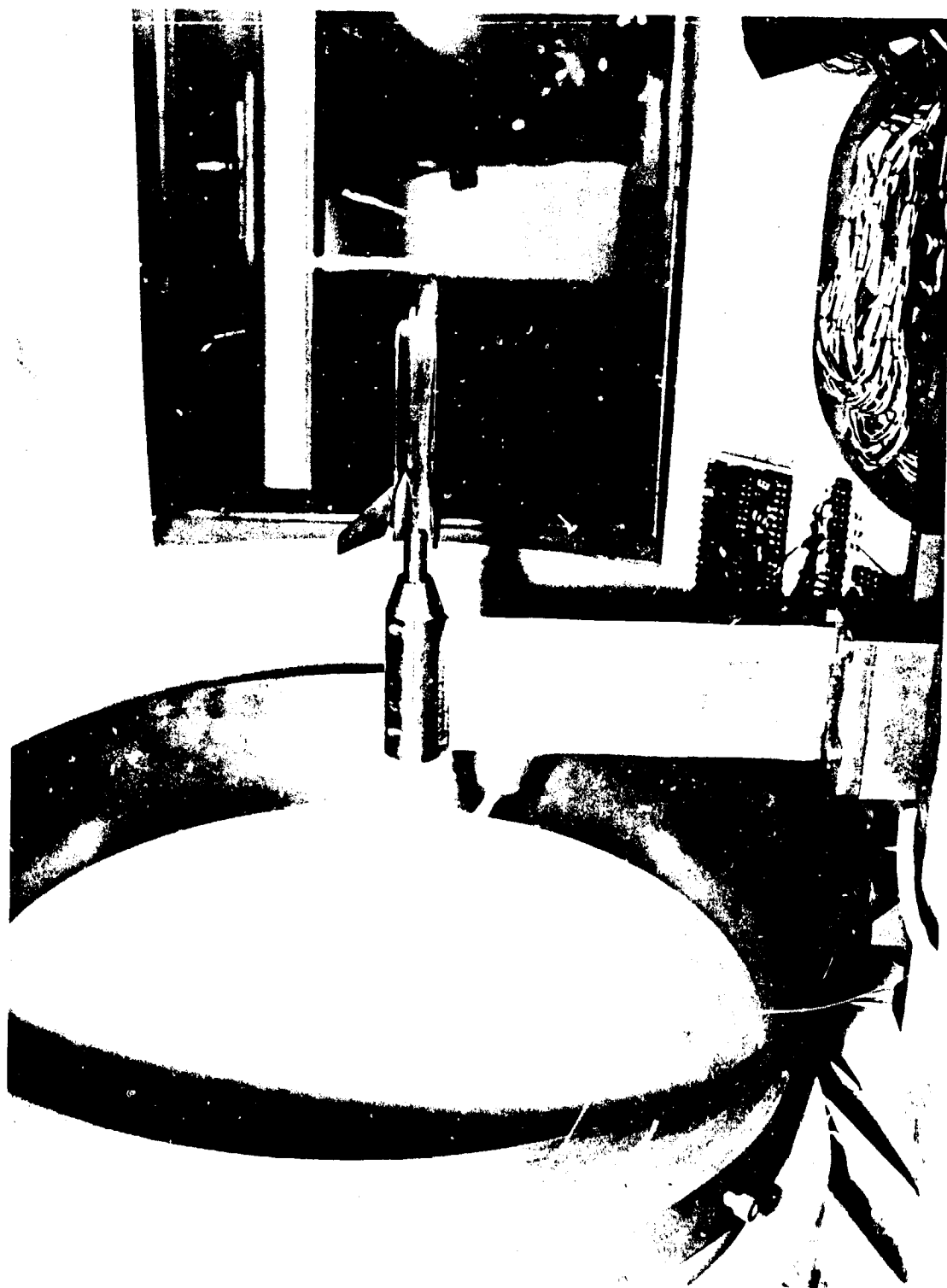


Figure 3. - Typical model installation photograph at $\alpha = 0$.

DATA FIGURES

PRECEDING PAGE BLANK NOT FILMED

IH18 B10C507W87M3F4V5 ORBITER FUSELAGE (XQMB07)
 SYMBOL Y(BP) HAW/HT RN/L ALPHA BETA
 .000 .850 5.315 .000 .000
 70.000 6.000

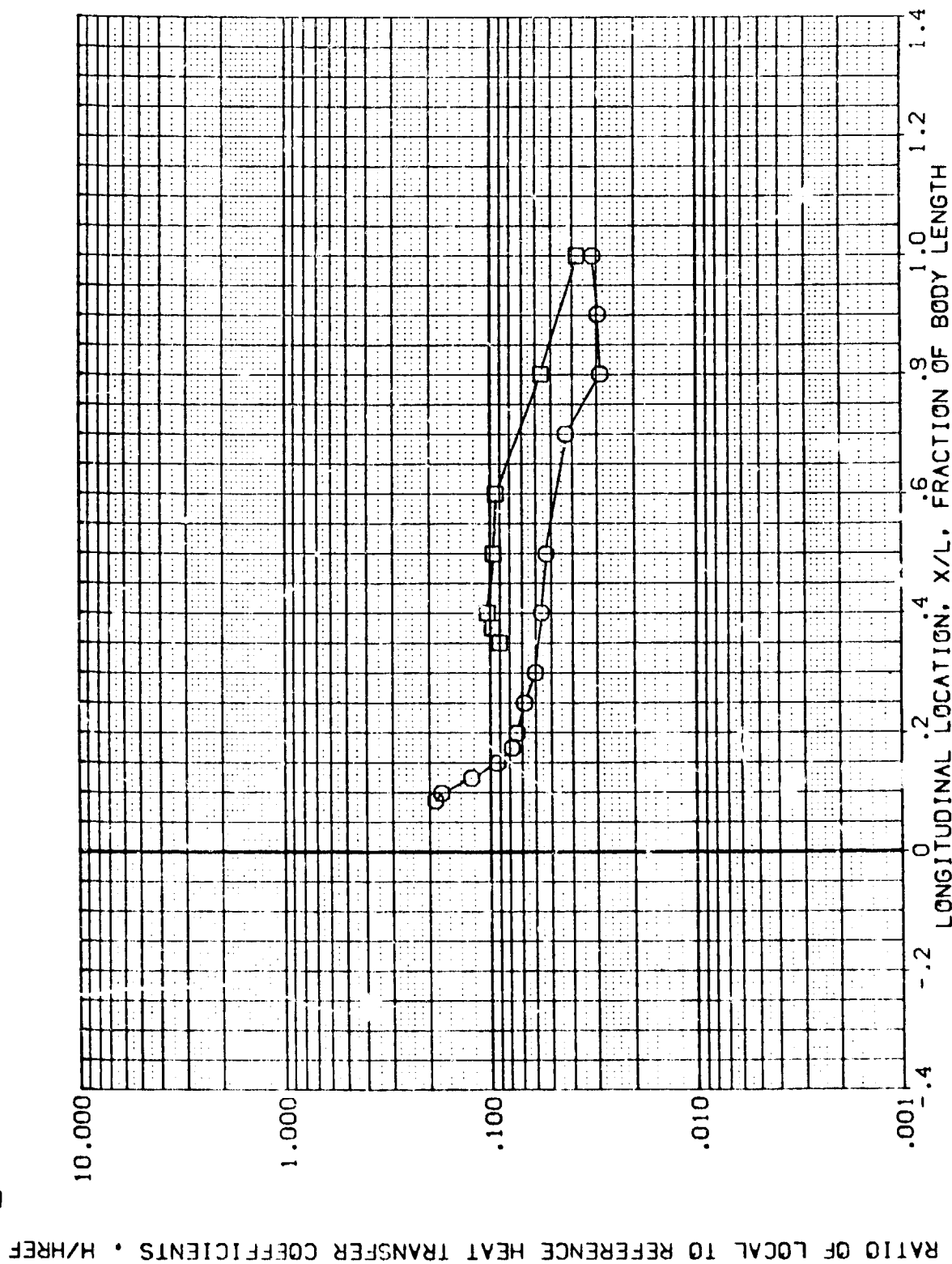


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

IH18 B10C507W87M3F4V5

ORBITER FUSELAGE (XQMB07)

SYMBOL
□

Y(BP)
.000
70.000

HAW/HT
.900

RN/L
5.315

PARAMETRIC VALUES
ALPHA
MACH
.000
5.000
BETA
6.000
.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

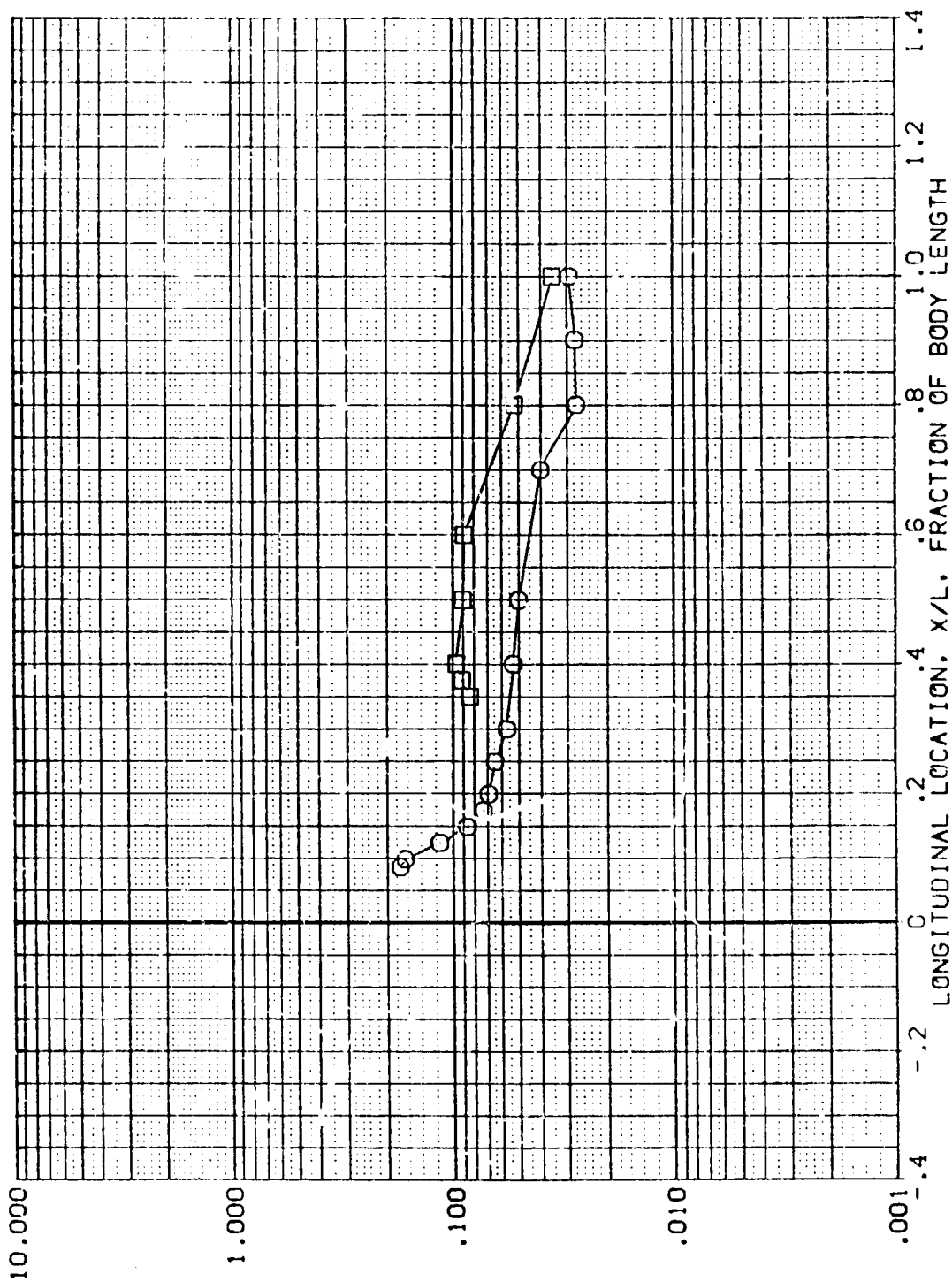


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

SYMBOL \square

Y(BP) .000 70.000

MAV/HT 1.000

RN/L 5.315

IH18 B10C5D7W87M3F4V5

ORBITER FUSELAGE (XQMB07)

PARAMETRIC VALUES

.000 BETA .000

ALPHA MACH 5.000

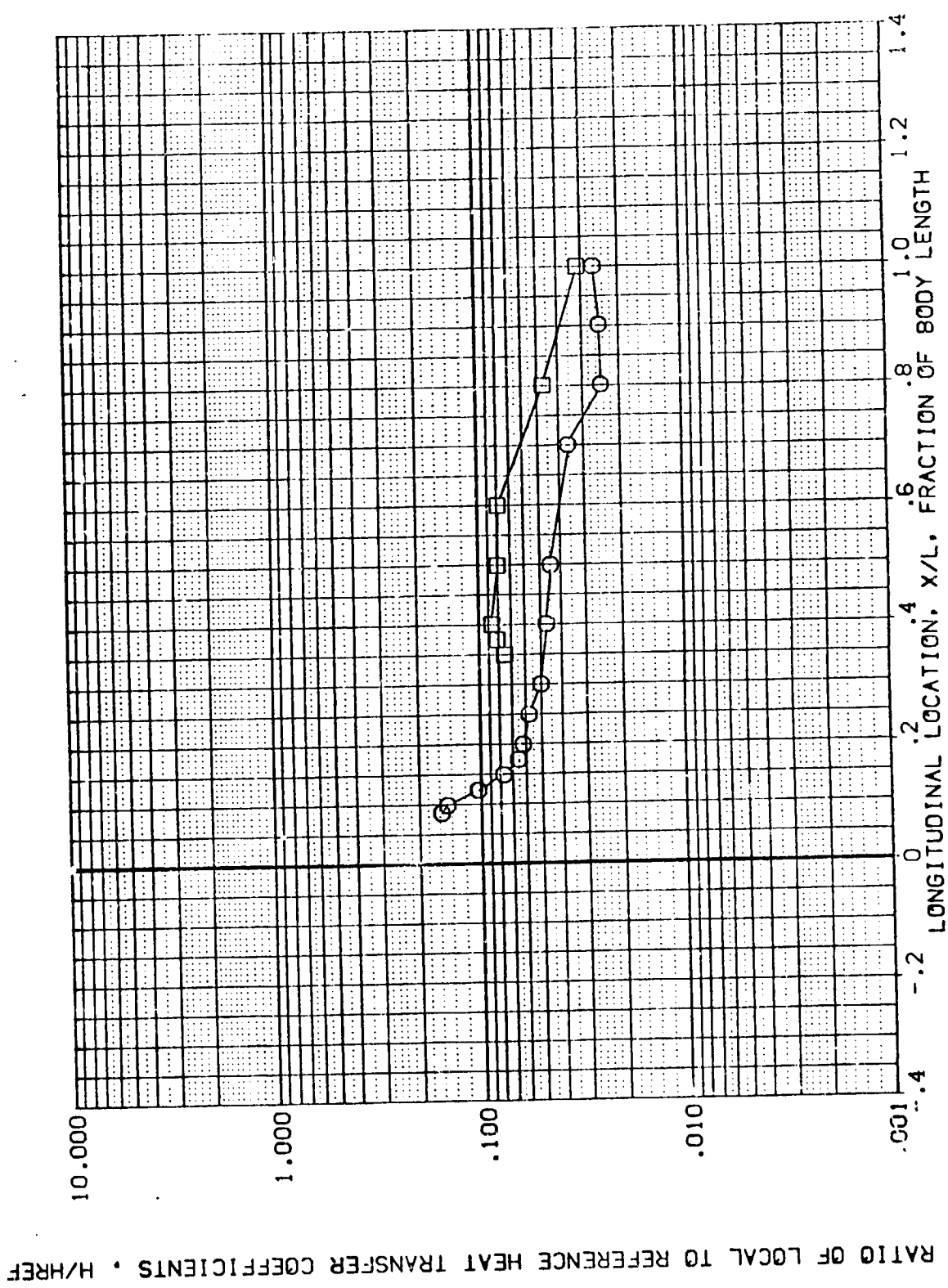


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

IH18 B10C507W87M3F4V5

ORBITER FUSELAGE (RQMB08)

SYMBOL

Y(BP)

MAW/HT

RN/L

4.583

70.000

0.000

0.850

0.000

0.000

0.000

0.000

PARAMETRIC VALUES

-5.000

BETA

0.000

0.000

0.000

0.000

0.000

ALPHA

MACH

0.000

0.000

0.000

0.000

0.000

0.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

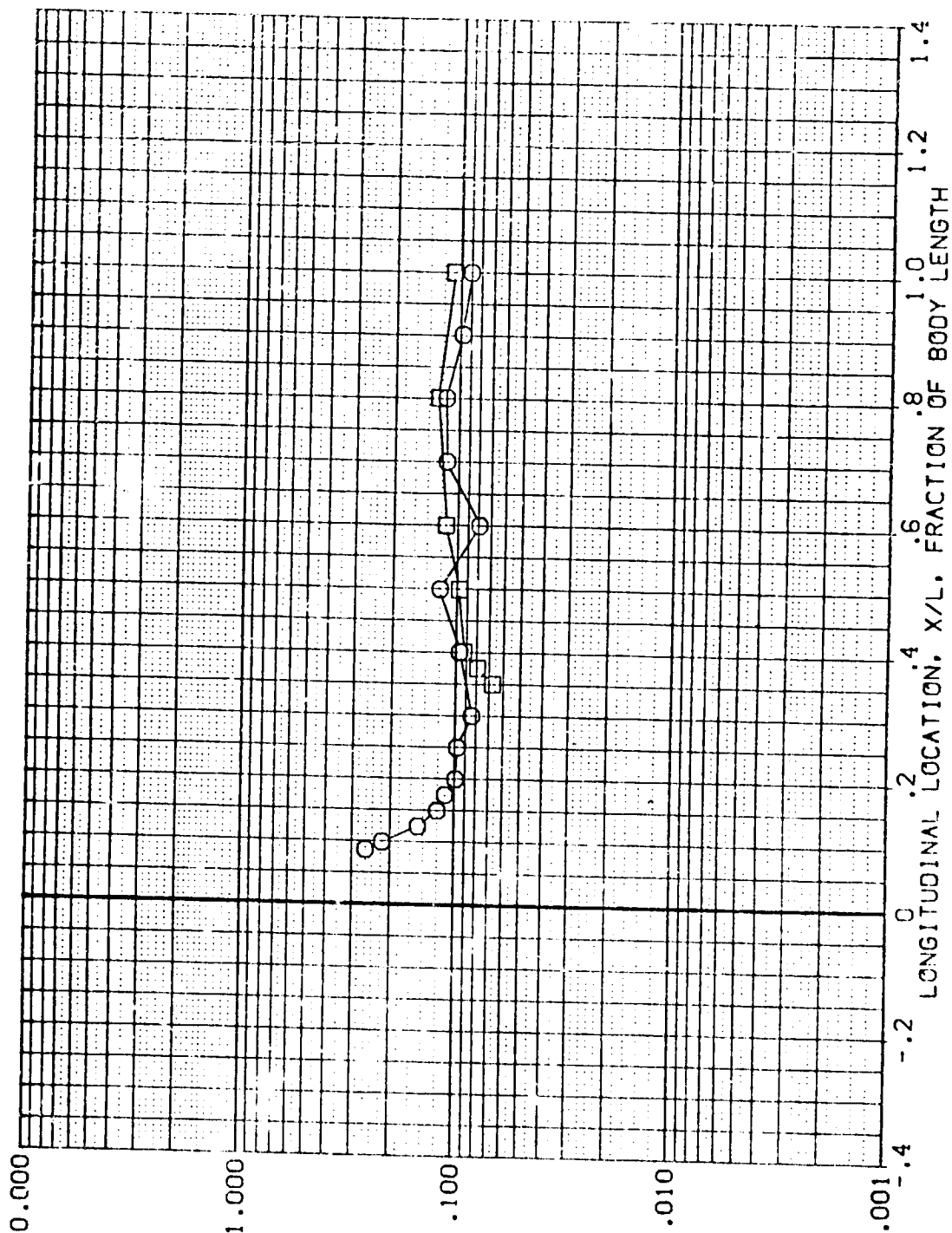


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

IH18 B10C5D7W87M3F4V5

ORBITER FUSELAGE (RQMB08)

SYMBOL
□
○

Y(BP) .000
70.000

HAW/HT .900

RN/L 4.583

PARAMETRIC VALUES
ALPHA
MACH

-5.000
6.000

BETA .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

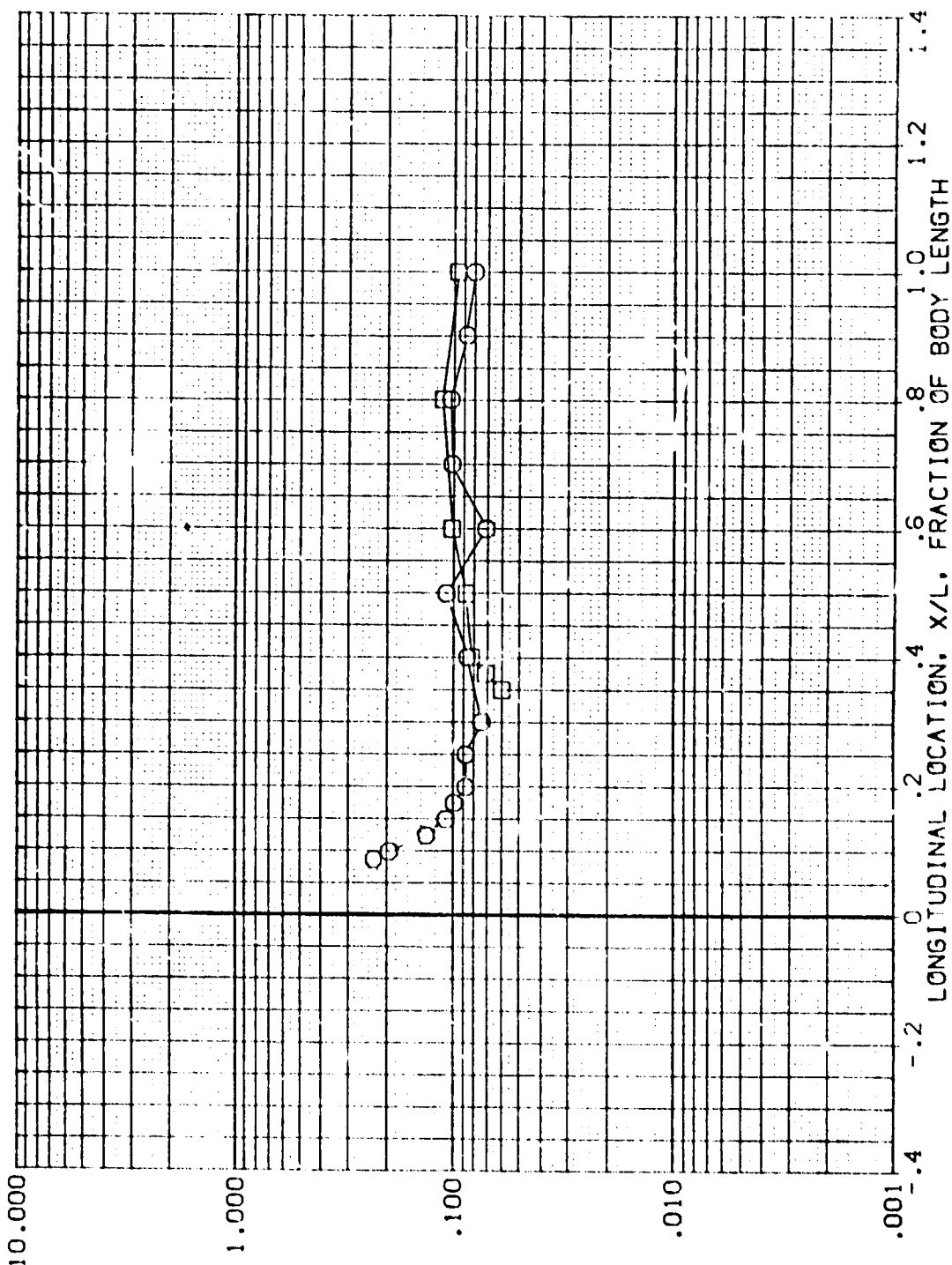


FIG 4 ORBITER ALCOVE - BODY DATA - NO TRIPS

IH18 B10C5D7W87M3F4V5

ORBITER FUSELAGE (RQMB08)

SYMBOL Y(BP) HAW/HT RN/L
 □ .000 1.000 4.583
 □ 70.000

PARAMETRIC VALUES
 ALPHA BETA
 MACH 6.000 .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

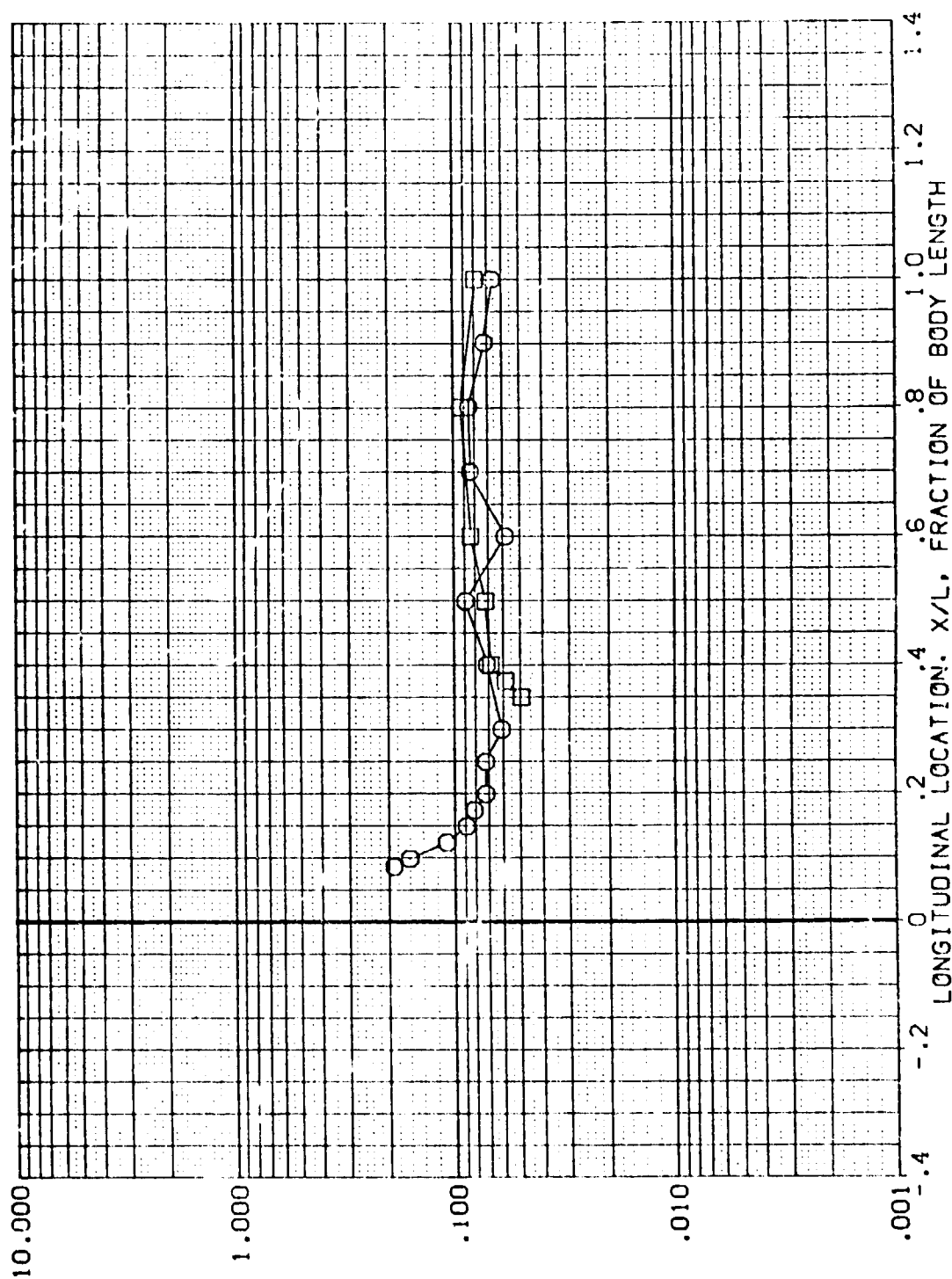


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X0-807) B I118 B10C5D7487H3F4V5
 (R0-808) B I118 B10C5D7487H3F4V5

ORBITER FUSELAGE
 ORBITER FUSELAGE
 BETA ALPHA MACH
 .000 .000 8.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

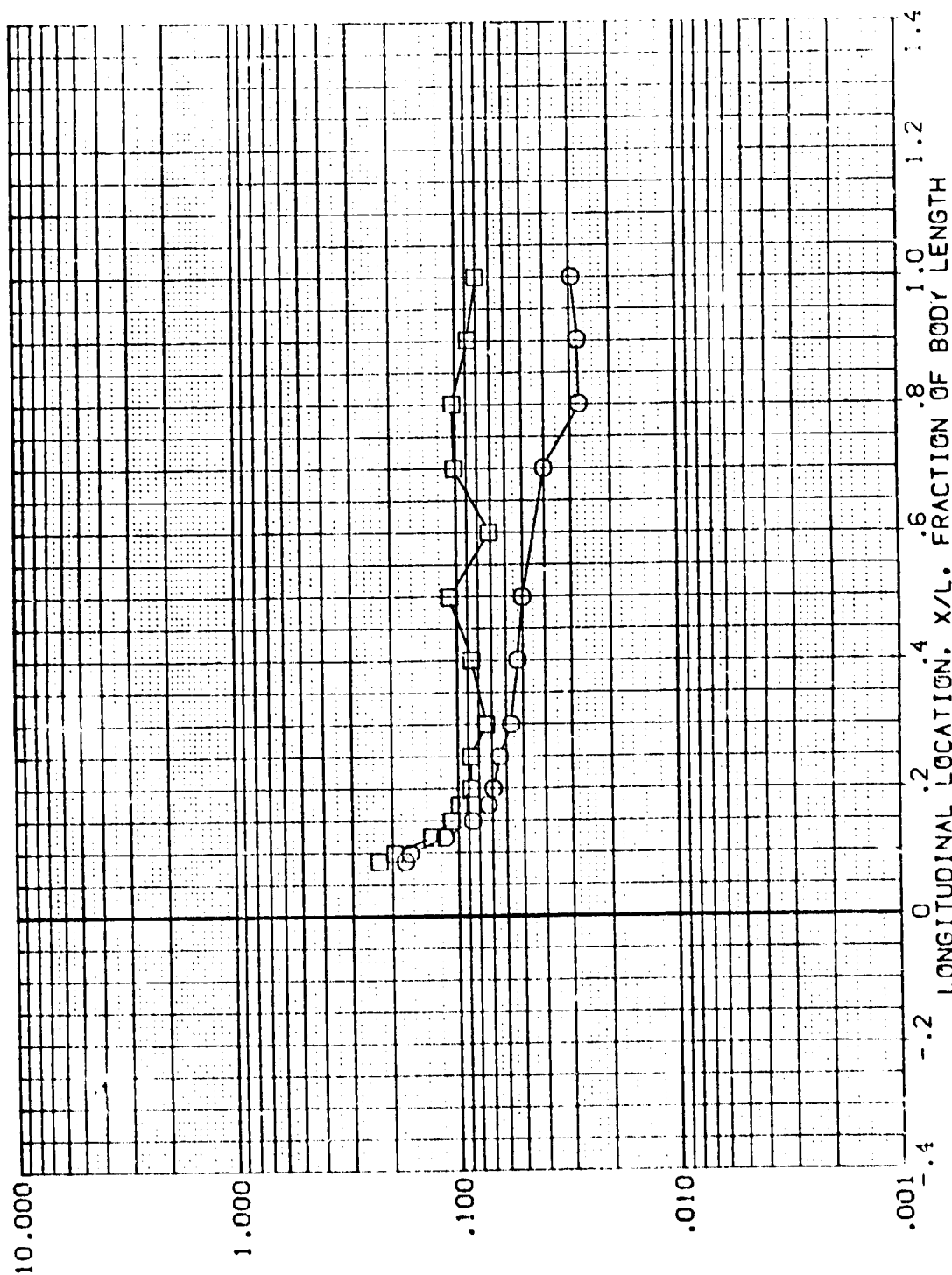


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

$R_N/L = 5.315$ $H_A/H_{REF} = .85C$ $Y(BP) = .000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (XOMB07) IM18 B10CSD7W87W3E4VS
 (RCH808) IM18 B10CSD7W87W3E4VS

ORBITER FUSELAGE
 ORBITER FUSELAGE
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

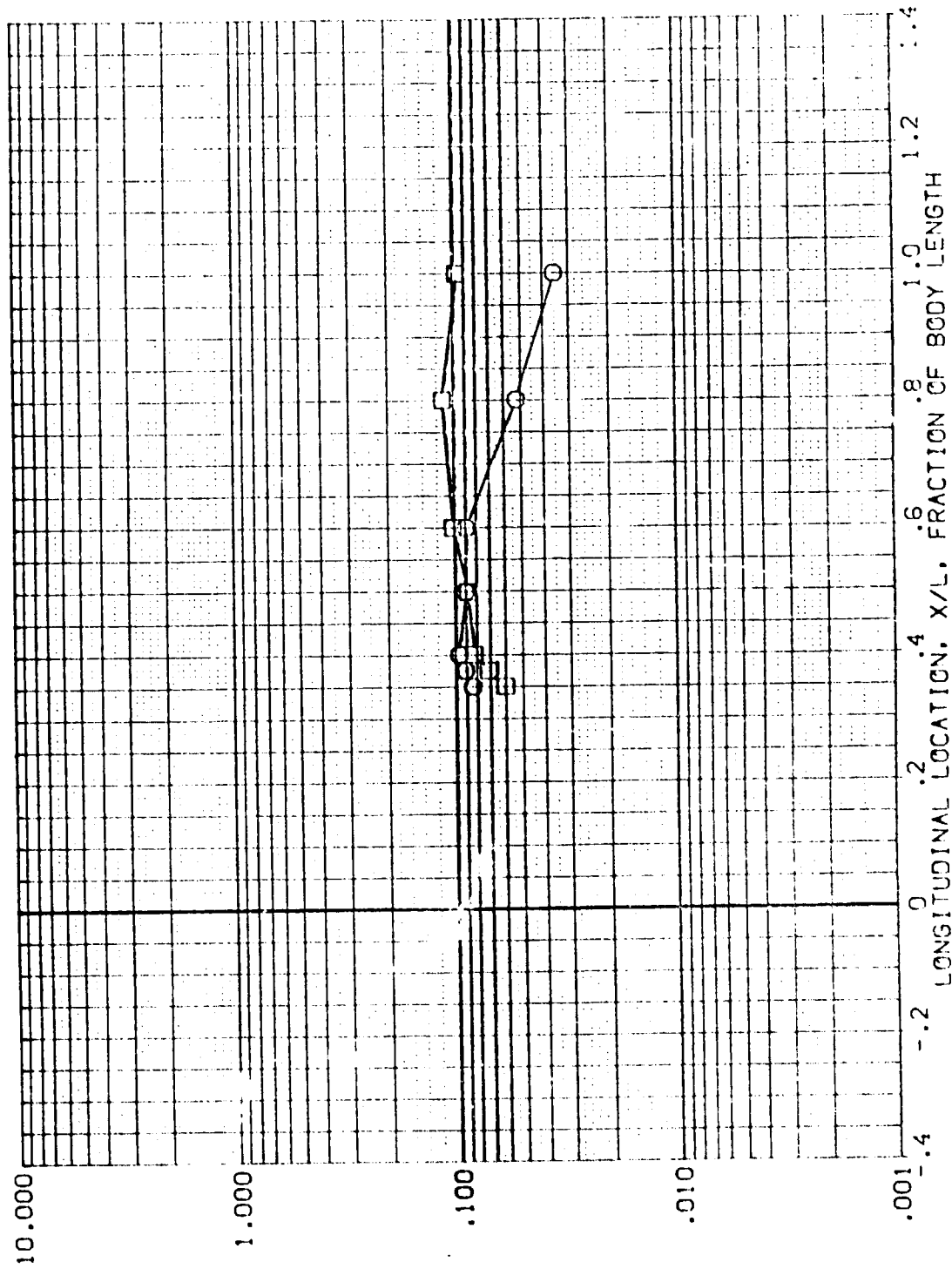


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

$R/L = 5.315$ $H/W/H_T = .850$ $Y(BP) = 70.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X04807) B I418 B10C507W87H3F4V5
 (R04808) B I418 B10C507W87H3F4V5

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

ORBITER FUSELAGE
 ORBITER FUSELAGE

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

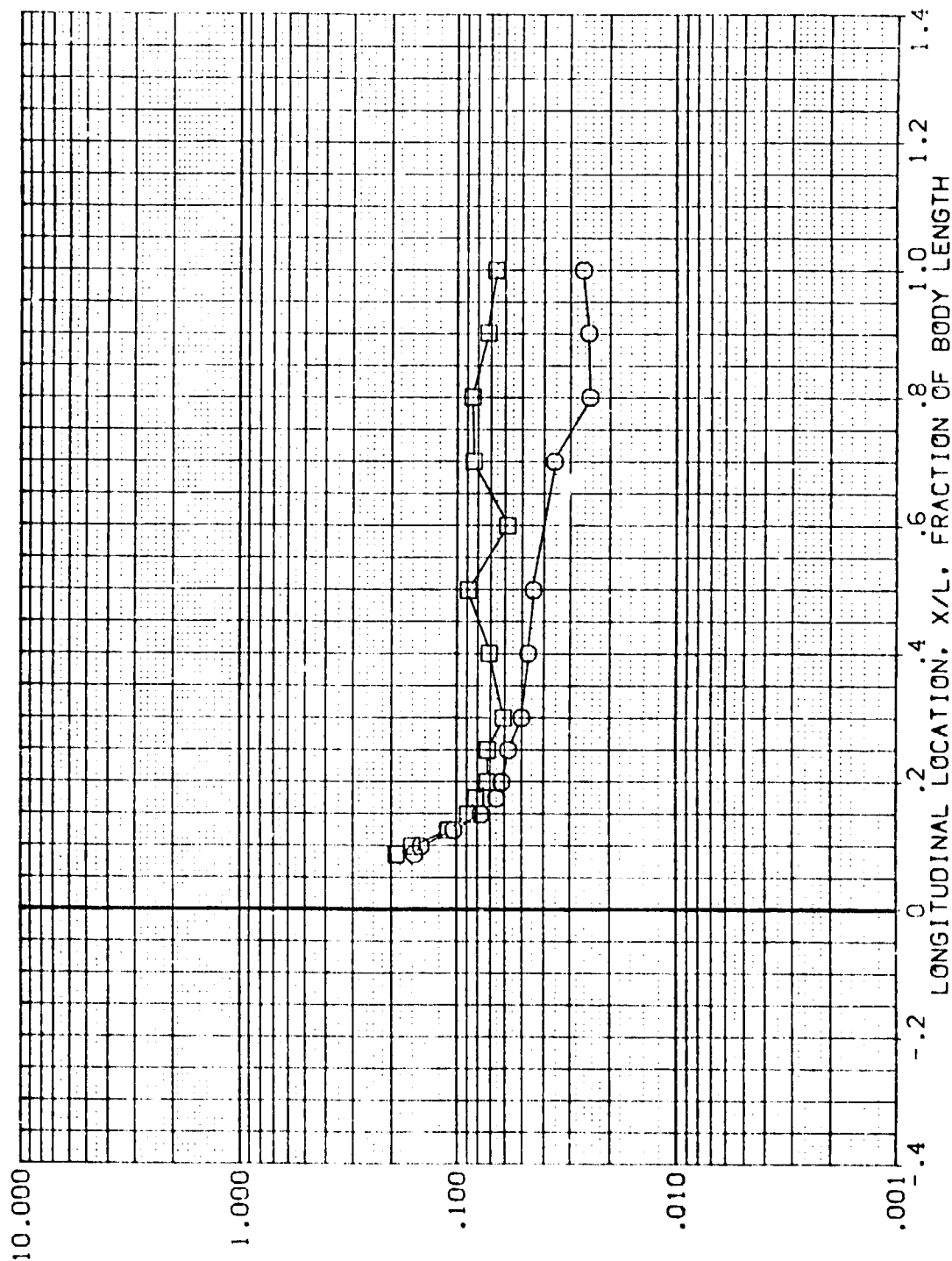


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

RN/L = 5.315 $h_{AW}/h_T = 1.000$ $Y(BP) = .000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X0807) B 1M18 B10C507487M3F4V5
 (R24808) 1M18 B10C507487M3F4V5

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

ORBITER FUSELAGE
 ORBITER FUSELAGE

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

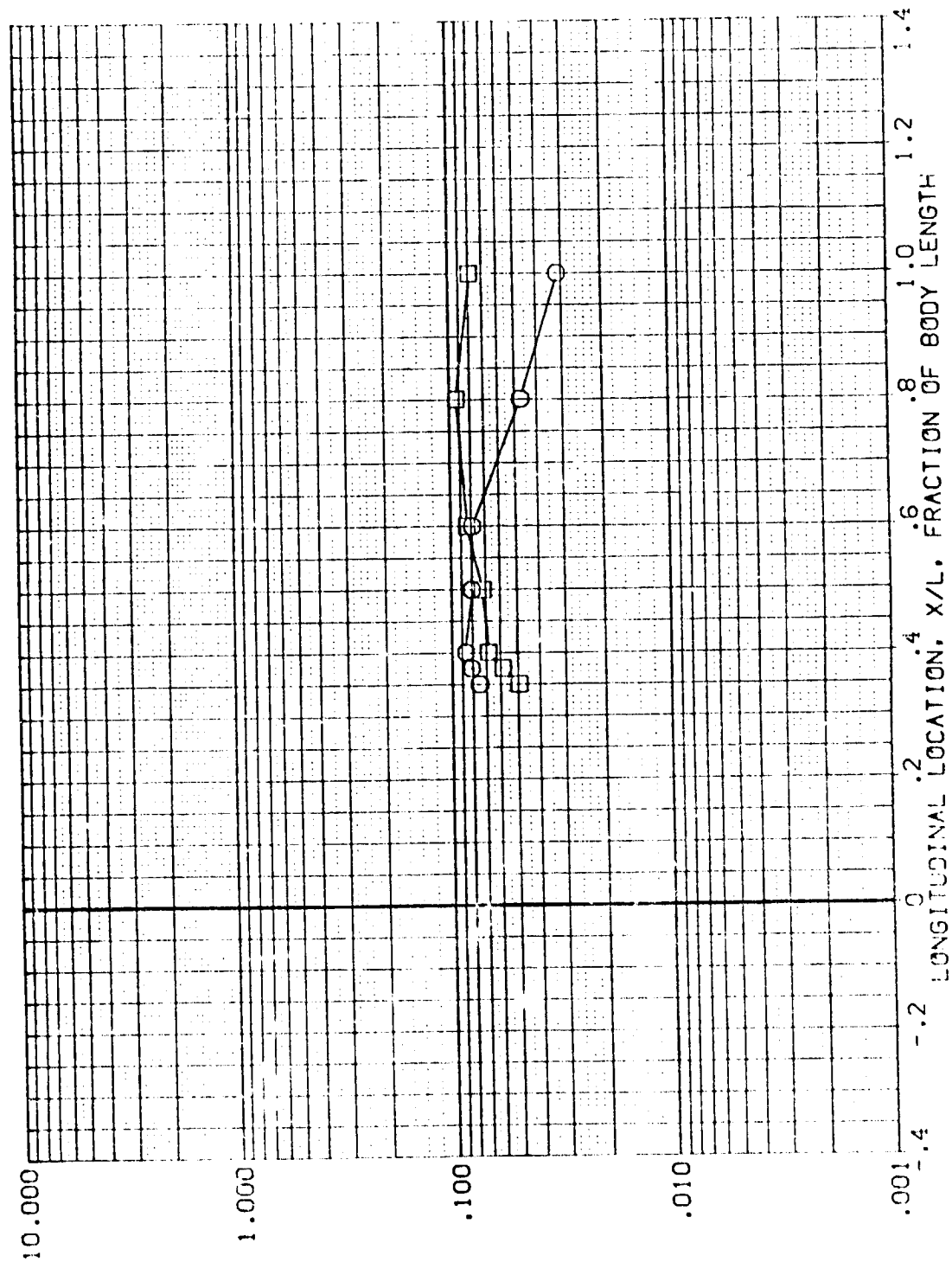


FIG 4 ORBITER ALONE - BODY DATA - NO TRIPS

$RN/L = 5.315$ $MAW/\sqrt{Re} = 1.000$ $Y(BP) = 70.000$

IH18 B10C5D7W87M3F4V5 X26 ORBITER FUSELAGE (XQMB0G)

SYMBOL	Y(BP)	HAW/HT	RN/L	PARAMETRIC VALUES
□	.000	.850	4.000	ALPHA
□	70.000			MACH
				-5.000
				BETA
				6.000
				X-HT
				.000
				.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

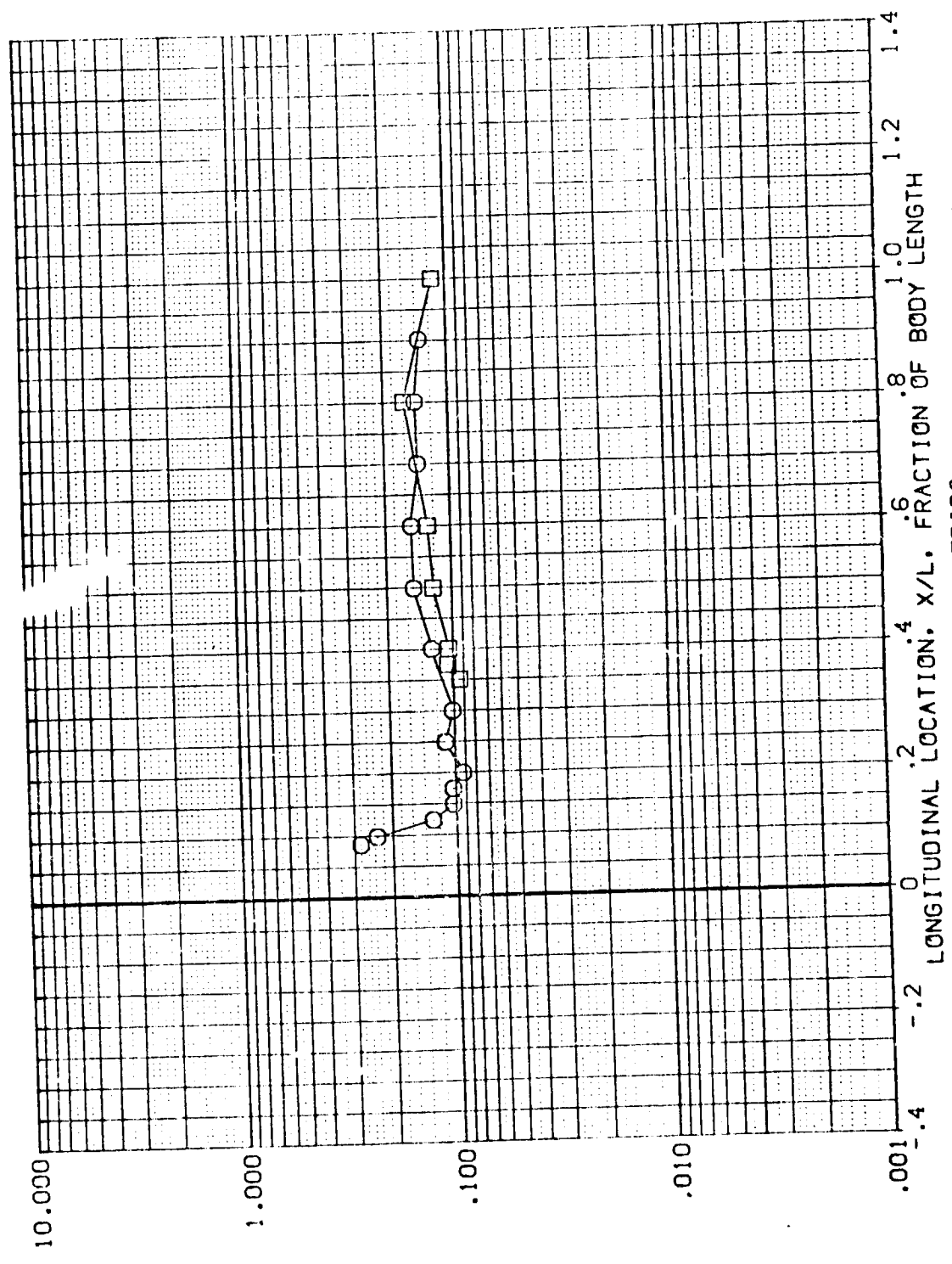


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 X26 ORBITER FUSELAGE (XQMB09)

SYMBOL	Y(BP)	HAW/HT	RN/L	PARAMETRIC VALUES
□	.000	.900	4.778	ALPHA
○	70.000			HACH
				BETA
				X-RT
				.000
				.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

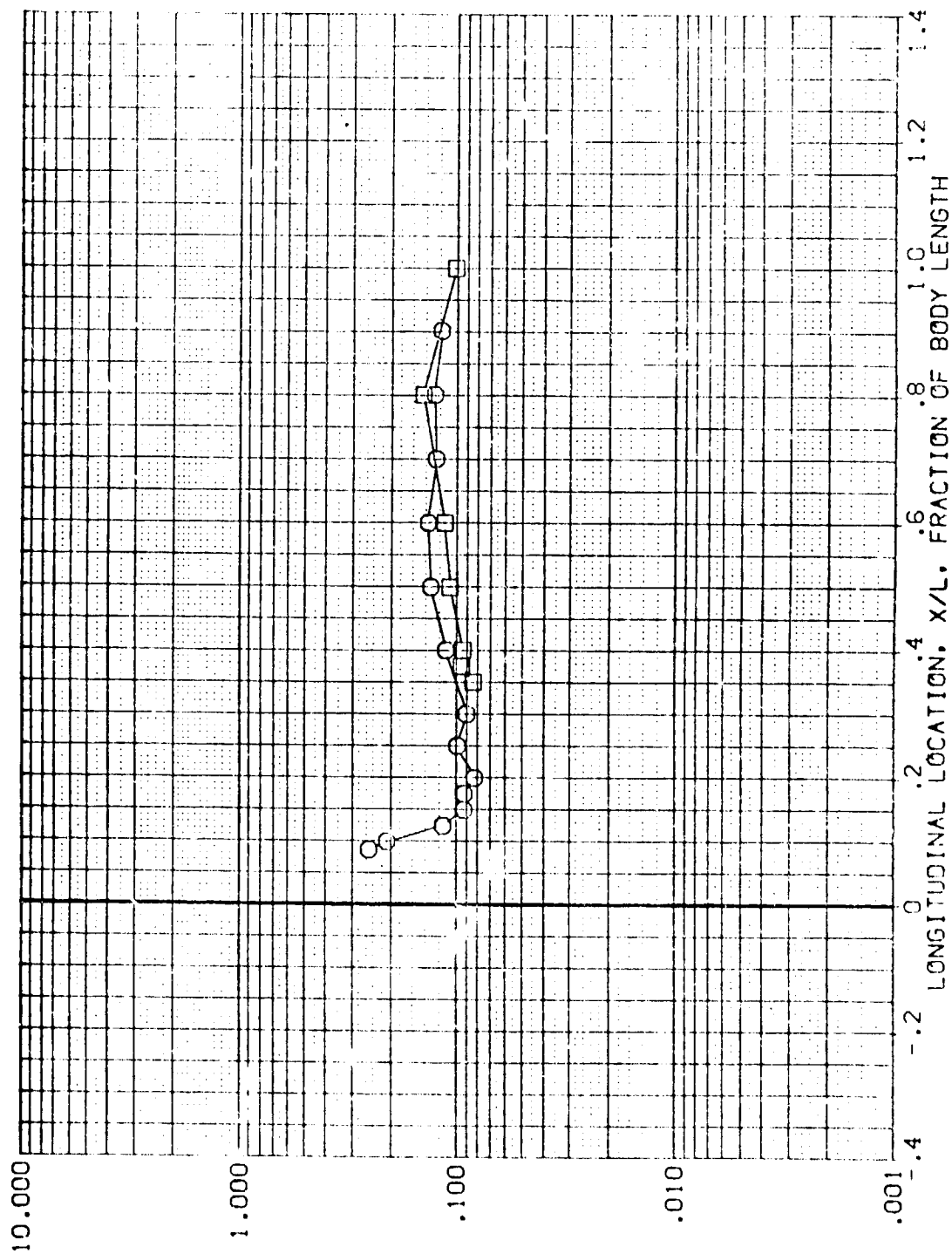


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

1H18 B10C507W87M3F4V5 X26 ORBITER FUSELAGE (XQMB09)

SYMBOL	Y(BP)	HAW/HT	RN/L	ALPHA	PARAMETRIC VALUES
□	.000	1.000	4.778	MACH	-5.000 BETA
○	70.000				6.000 X-HT
					.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

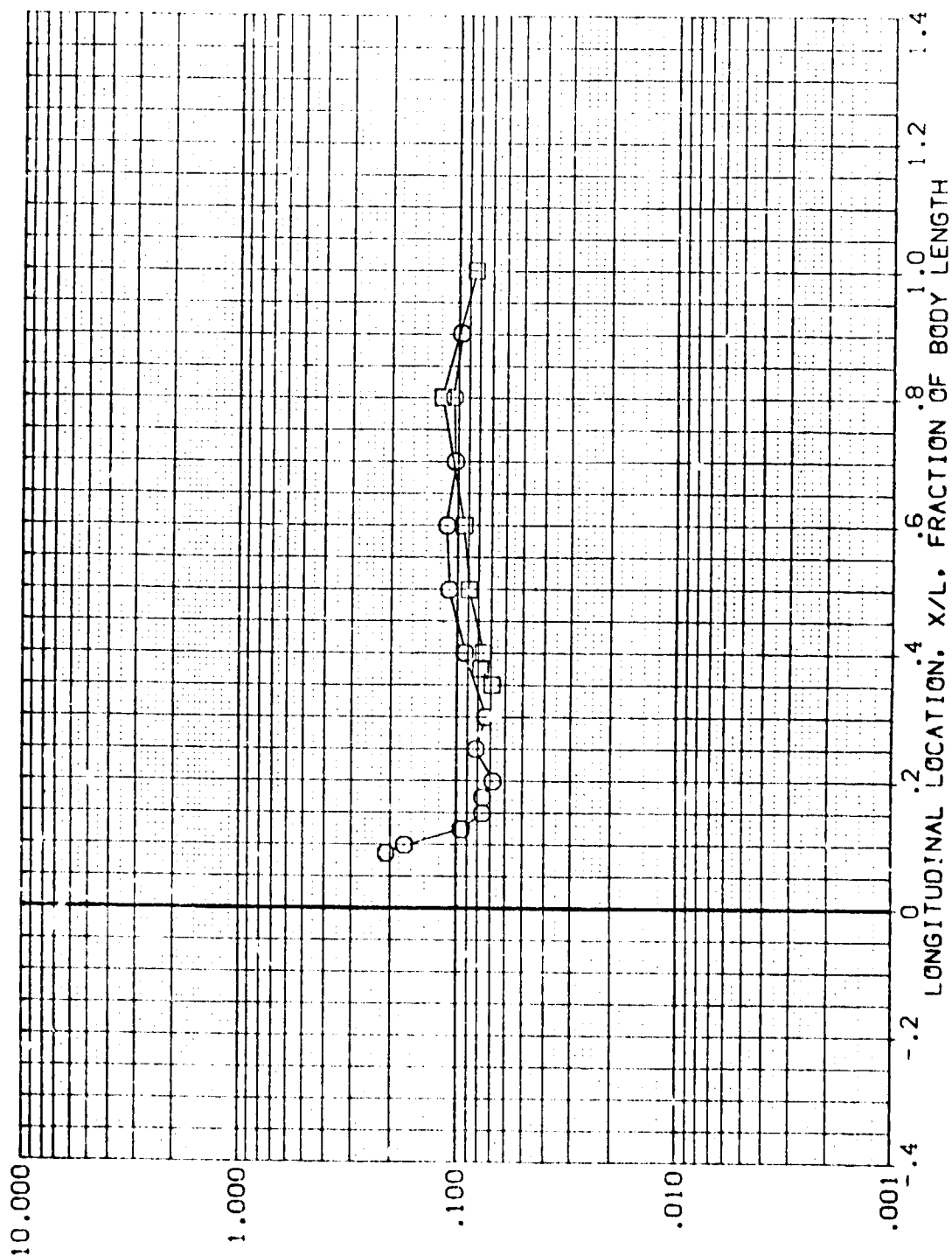


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 X26 ORBITER FUSELAGE (XQMB10)

SYMBOL	Y(BP)	MAW/HT	RN/L	PARAMETRIC VALUES		
				ALPHA	BETA	X-HT
□	.000	.850	4.844	6.000	.000	.031
○	70.000					

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

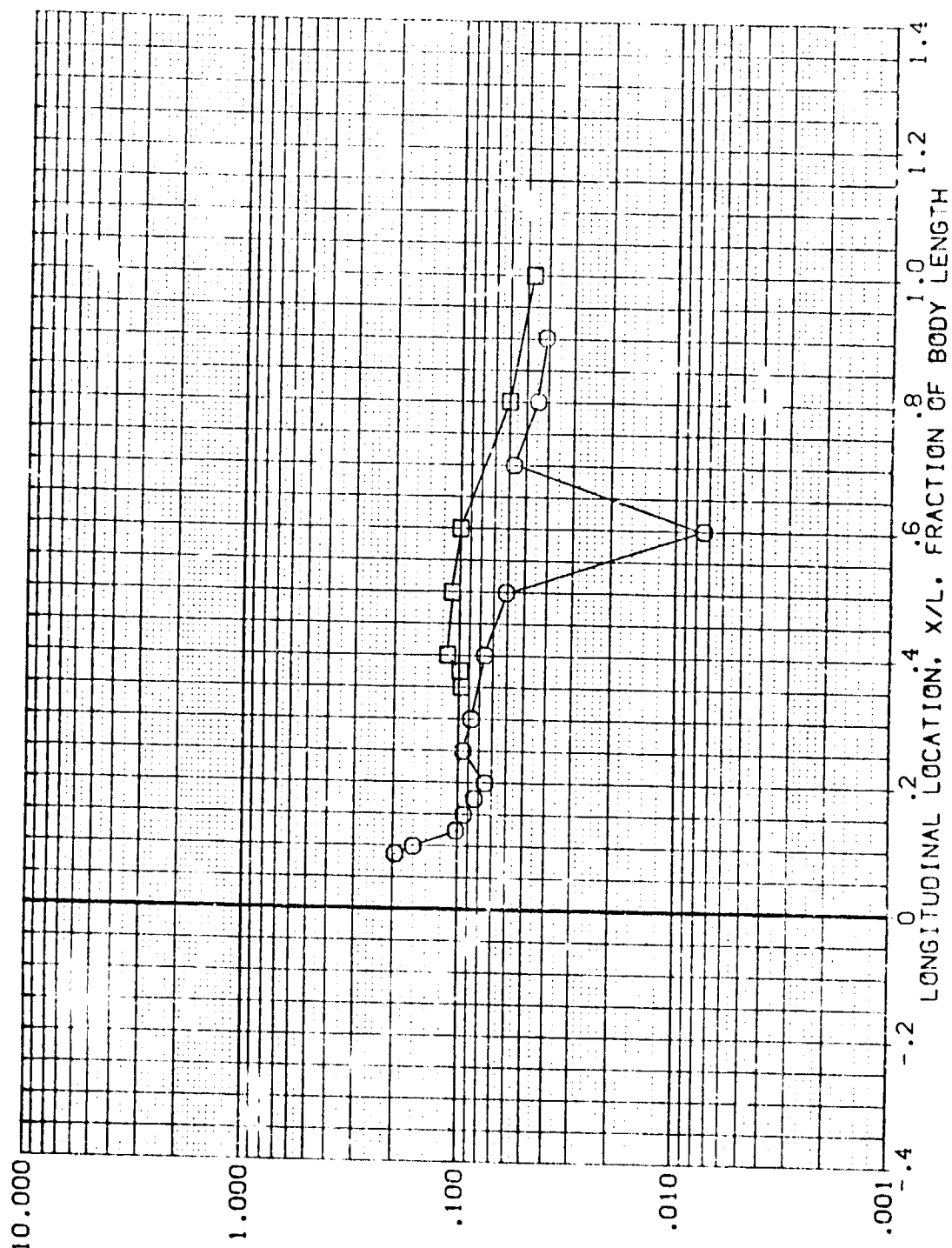


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

ORBITER FUSELAGE (XOMB10)

1H18 B10C507W87M3F4V5 X26

PARAMETRIC VALUES
 .000 BETA
 6.000 X-HT
 .000

ALPHA
 HACH

R1/L
 4.844

HAW/HT
 .900

1(BP)
 .000
 70.000

SYMBOL
 □

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

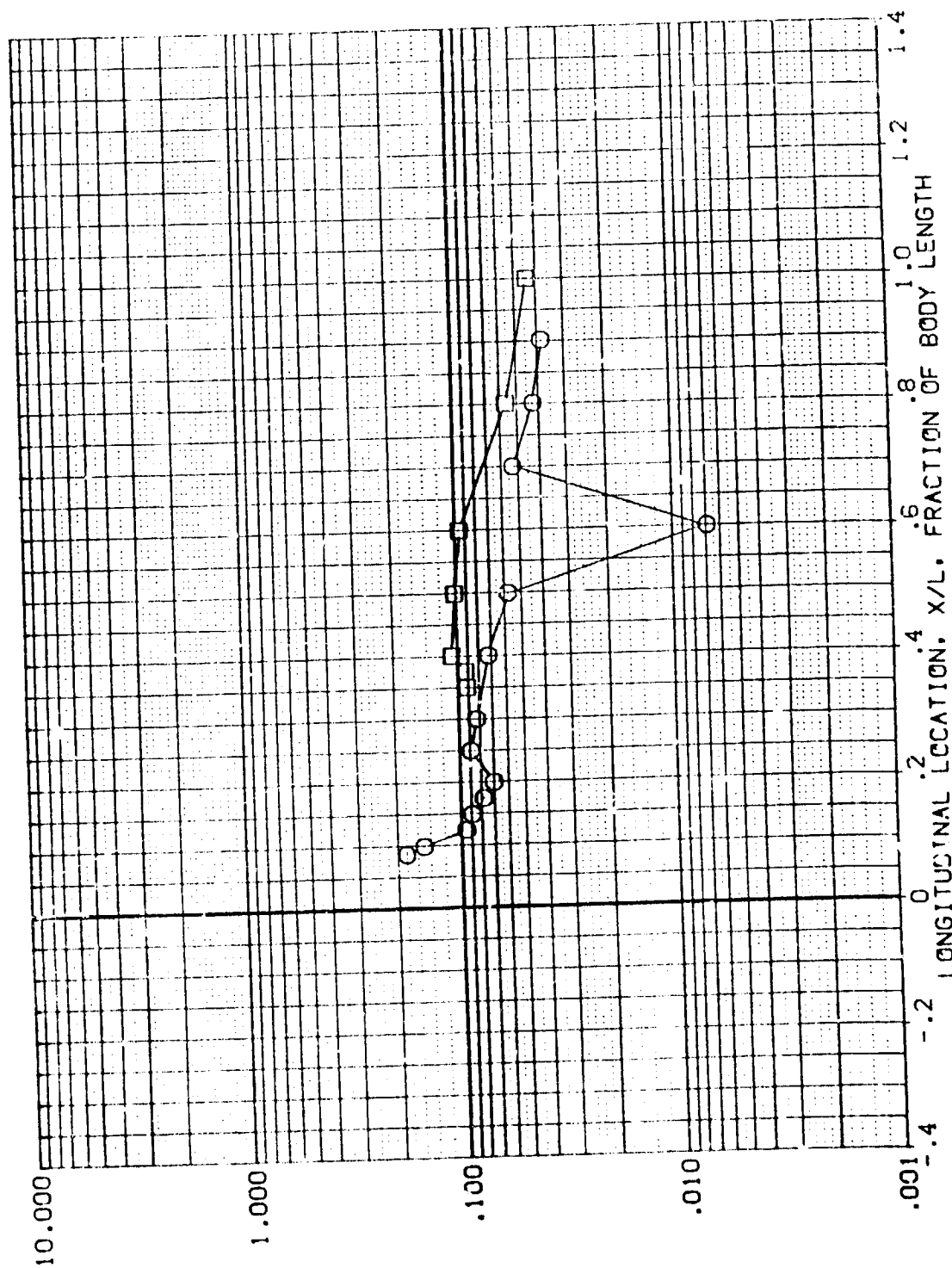


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

1H18 810C507W87M3F4V5 X26 ORBITER FUSELAGE (XQMB10)

PARAMETRIC VALUES
 .000 BETA
 5.000 X-HT
 .031

ALPHA
 MACH

SYMBOL Y(BP) HAW/HT RN/L
 .000 1.000 4.844
 70.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

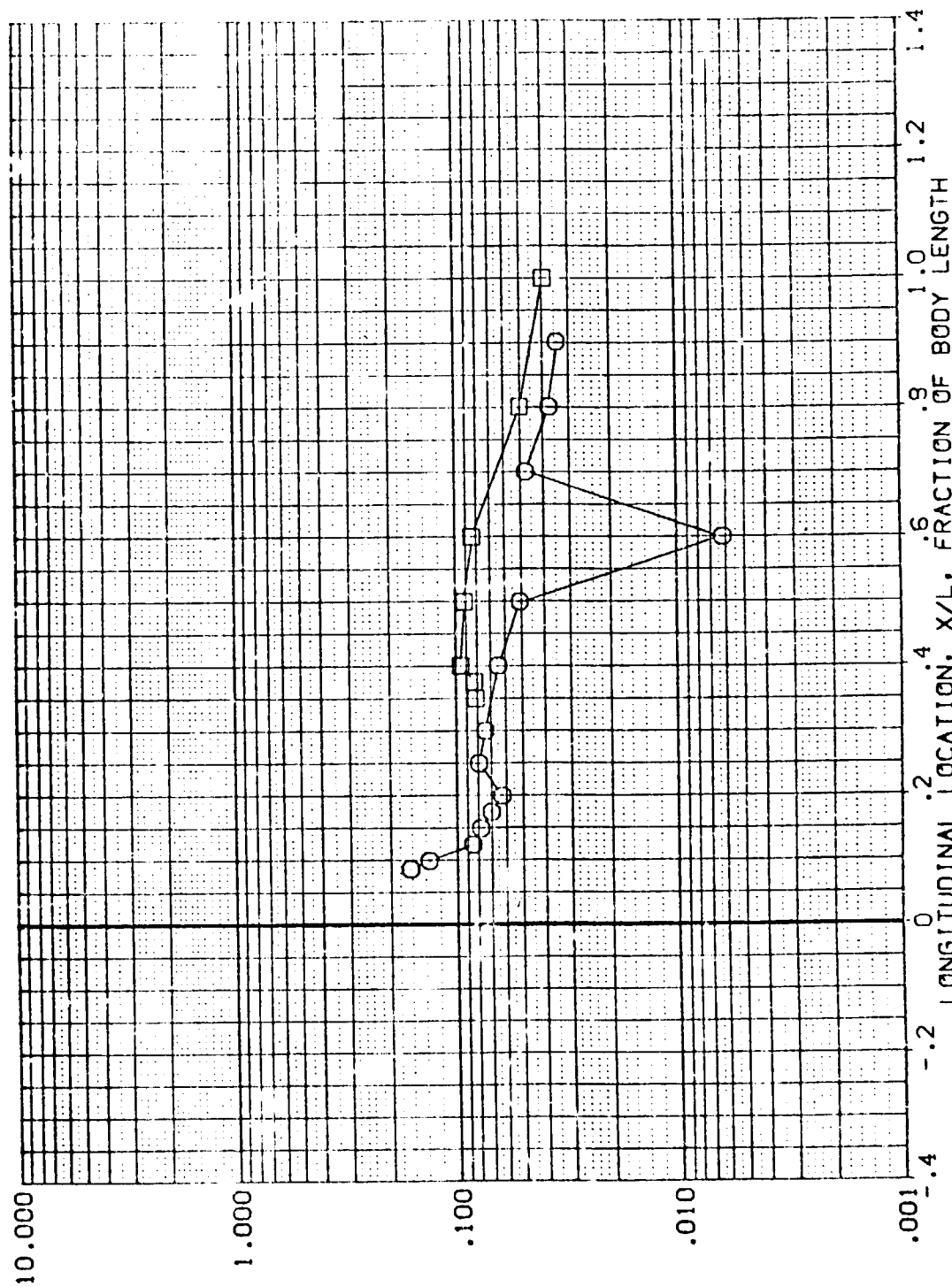


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

DATA SET S17/80L CONFIGURATION DESCRIPTION ORBITER FUSELAGE ORBITER FUSELAGE
 (XOMB09) [H18 B10C507W87M3F4V5 X26
 (XOMB10) [H19 B10C507W87M3F4V5 X26

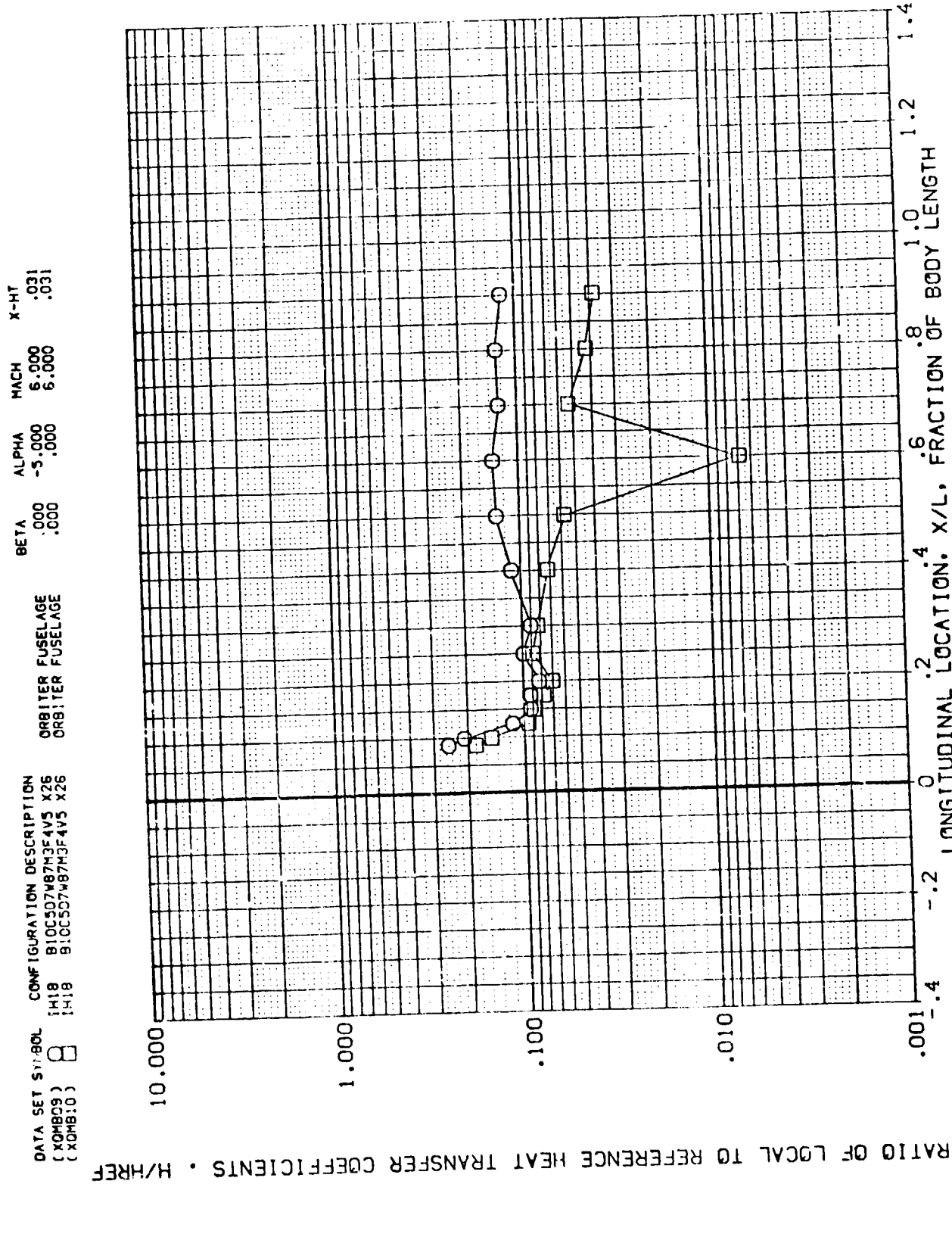


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = .850 Y(BP) = .000

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(XOMB09)	IH18 B10CSD7487M3F4V5 X26	.000	-5.000	6.000	.031
(XOMB10)	IH18 B10CSD7487M3F4V5 X26	.000	.000	6.000	.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

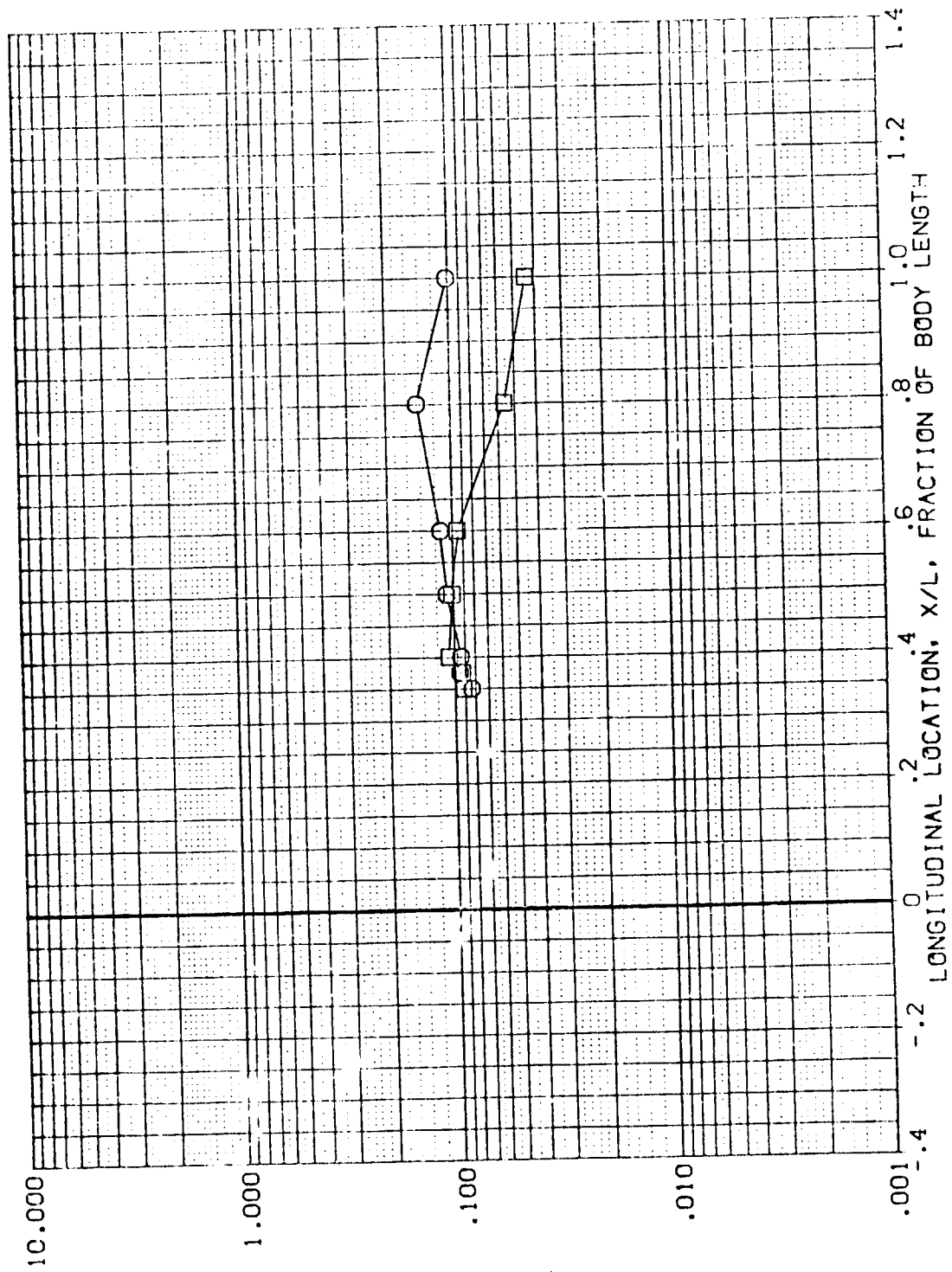


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

$Re/L = 4.778$ $h_{AW}/h_T = .850$ $Y(BP) = 70.000$

DATA SET 51480L CONFIGURATION DESCRIPTION ORBITER FUSELAGE X-HT
 (X0809) 1H18 B10C507487M3F4V5 X26 .031
 (X0810) 1H18 B10C507487M3F4V5 X26 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

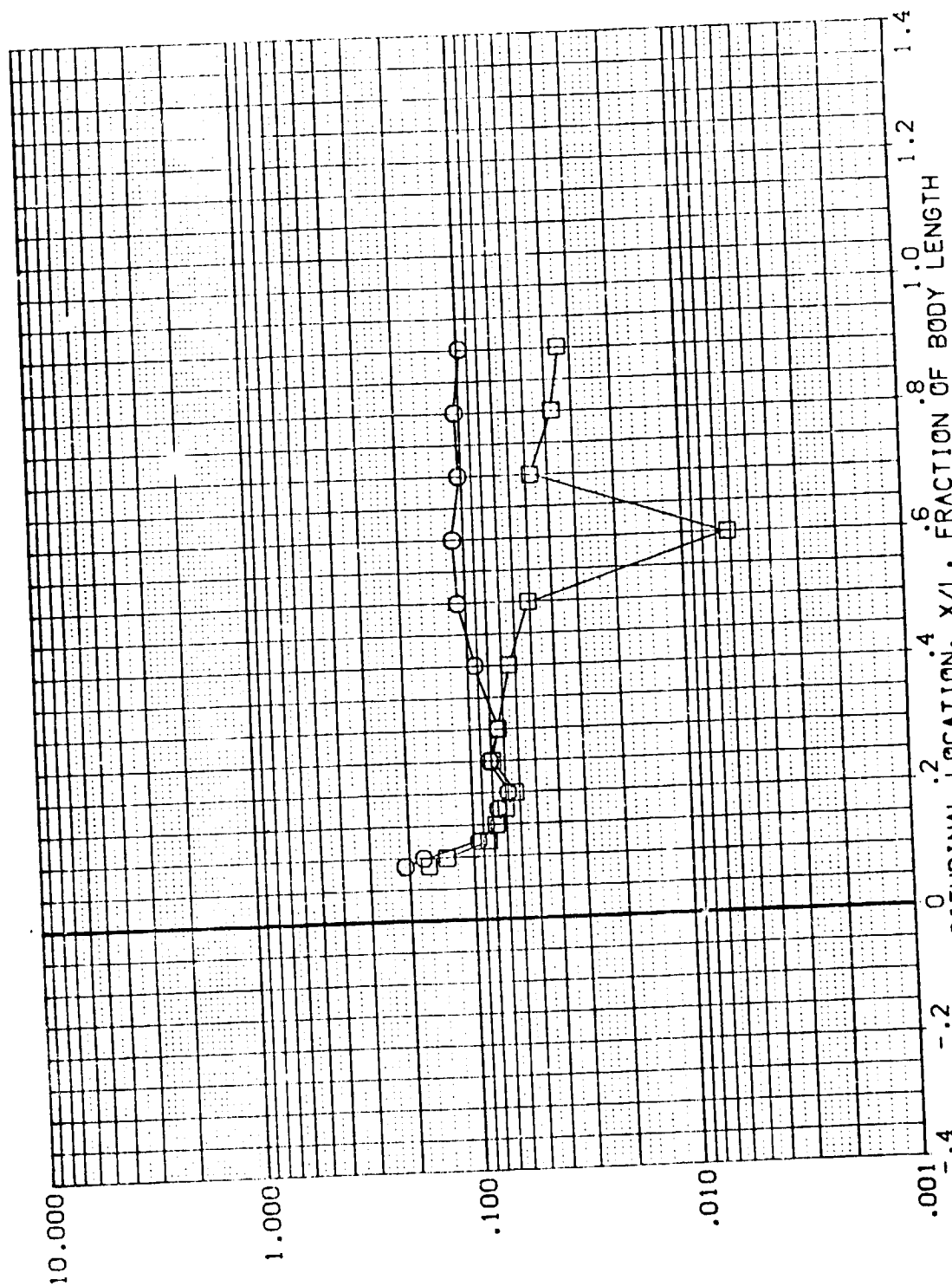


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = 1.000 Y(BP) = .000

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(XOMBOS)	IM18 B10C507W87M3F4V5 X26	.000	-5.000	6.000	.031
(XOMB10)	IM18 B10C507W87M3F4V5 X26	.000	.000	6.000	.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

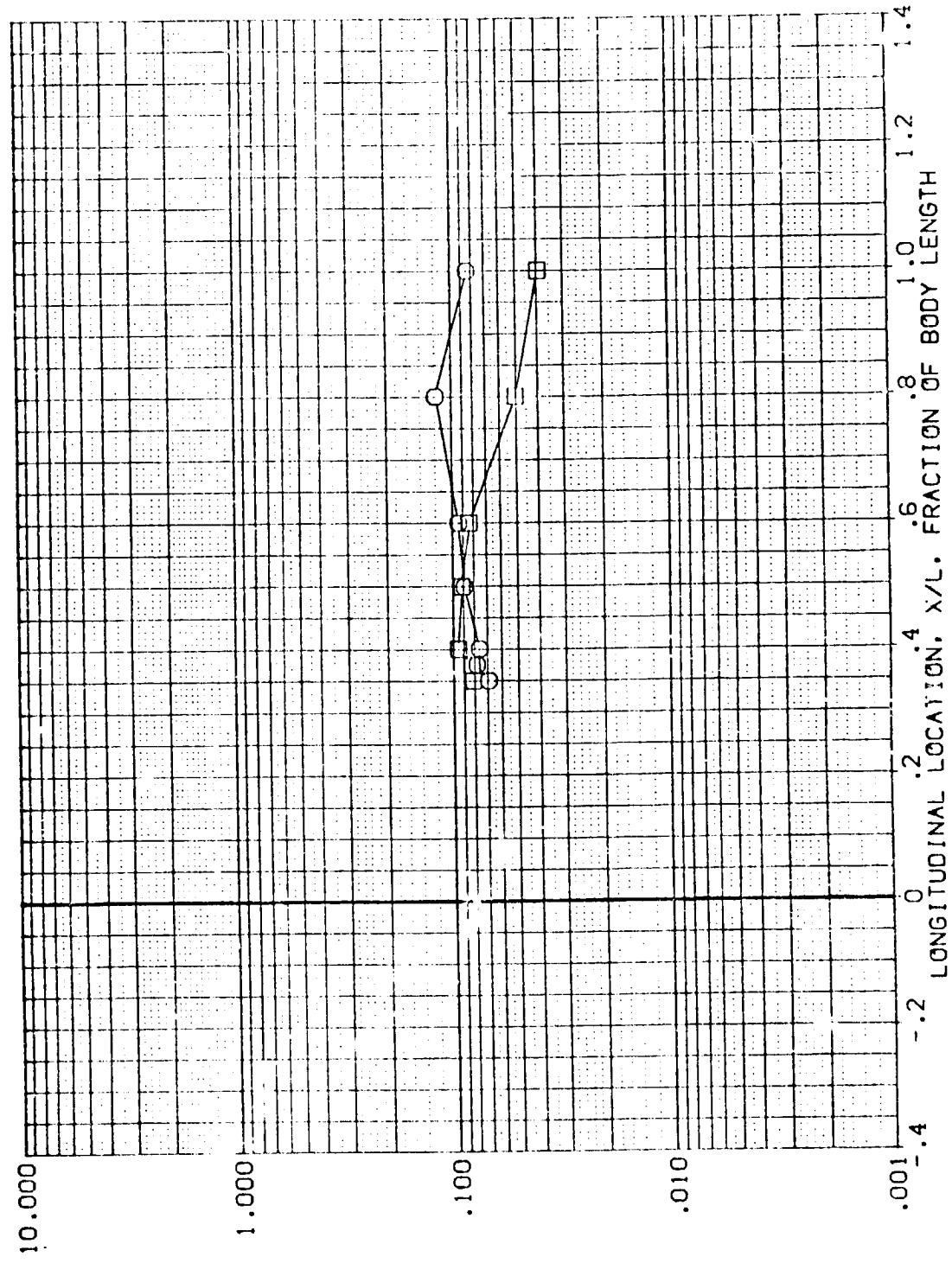


FIG 5 ORBITER ALONE - BODY DATA - SMALL TRIPS

ORBITER FUSELAGE (RQMB01)

IH18 B10C5D7W87M3F4V5 T8

PARAMETRIC VALUES
 .000 BETA
 6.000 DELTAH
 .000
 .175

ALPHA
 MACH

HAW/HT .850
 RN/L 4.778

Y(DP) .000
 70.000

SYMBOL
 □

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

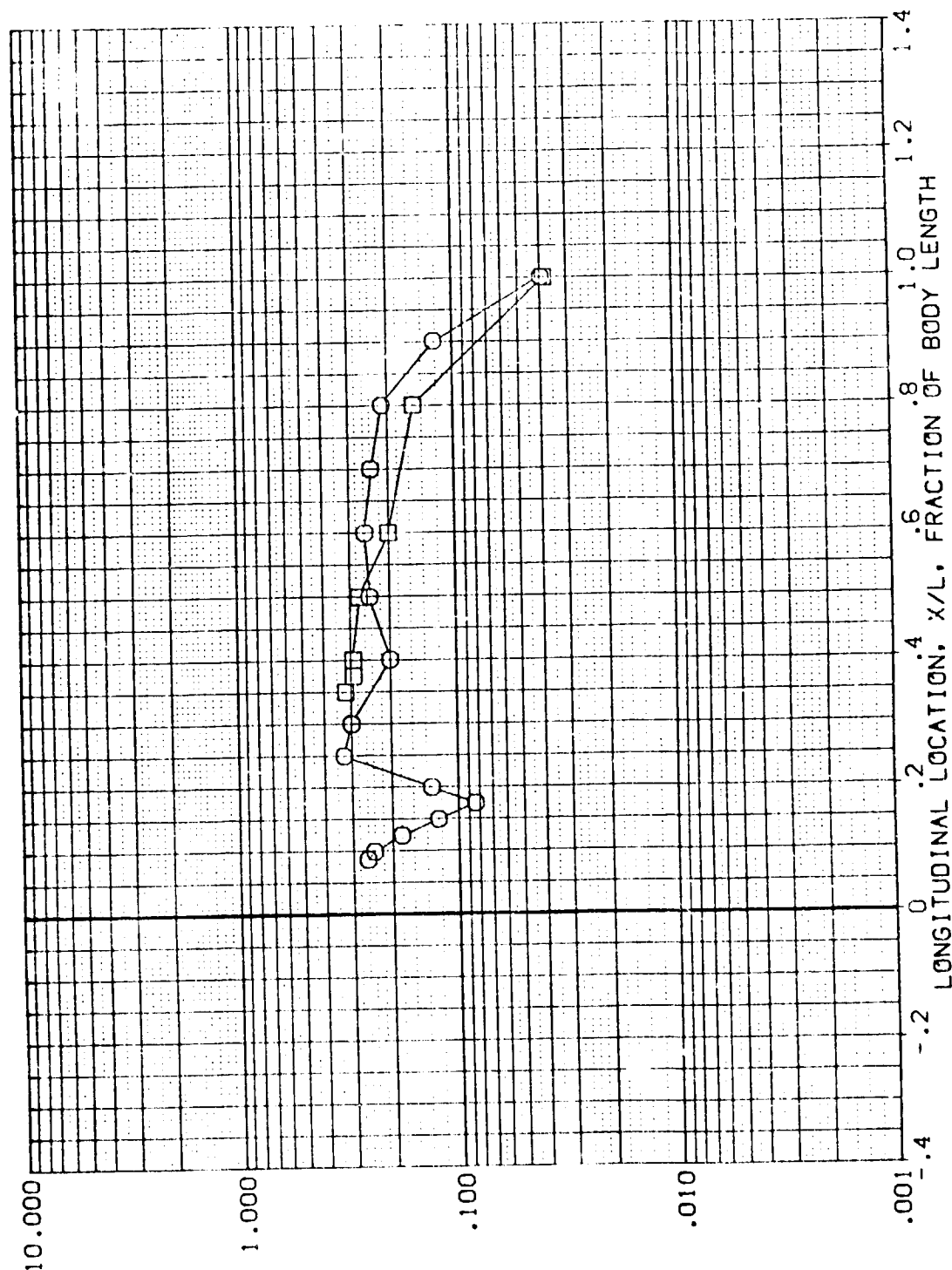


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

IH18 B10C507W87M3F4V5 T8

ORBITER FUSELAGE (RQM801)

SYMBOL

Y(CBP)
70.000

HAW/HT
.900

RN/L
4.778

PARAMETRIC VALUES
ALPHA
MACH
6.000
BETA
DELTAH
.000
.175

□

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

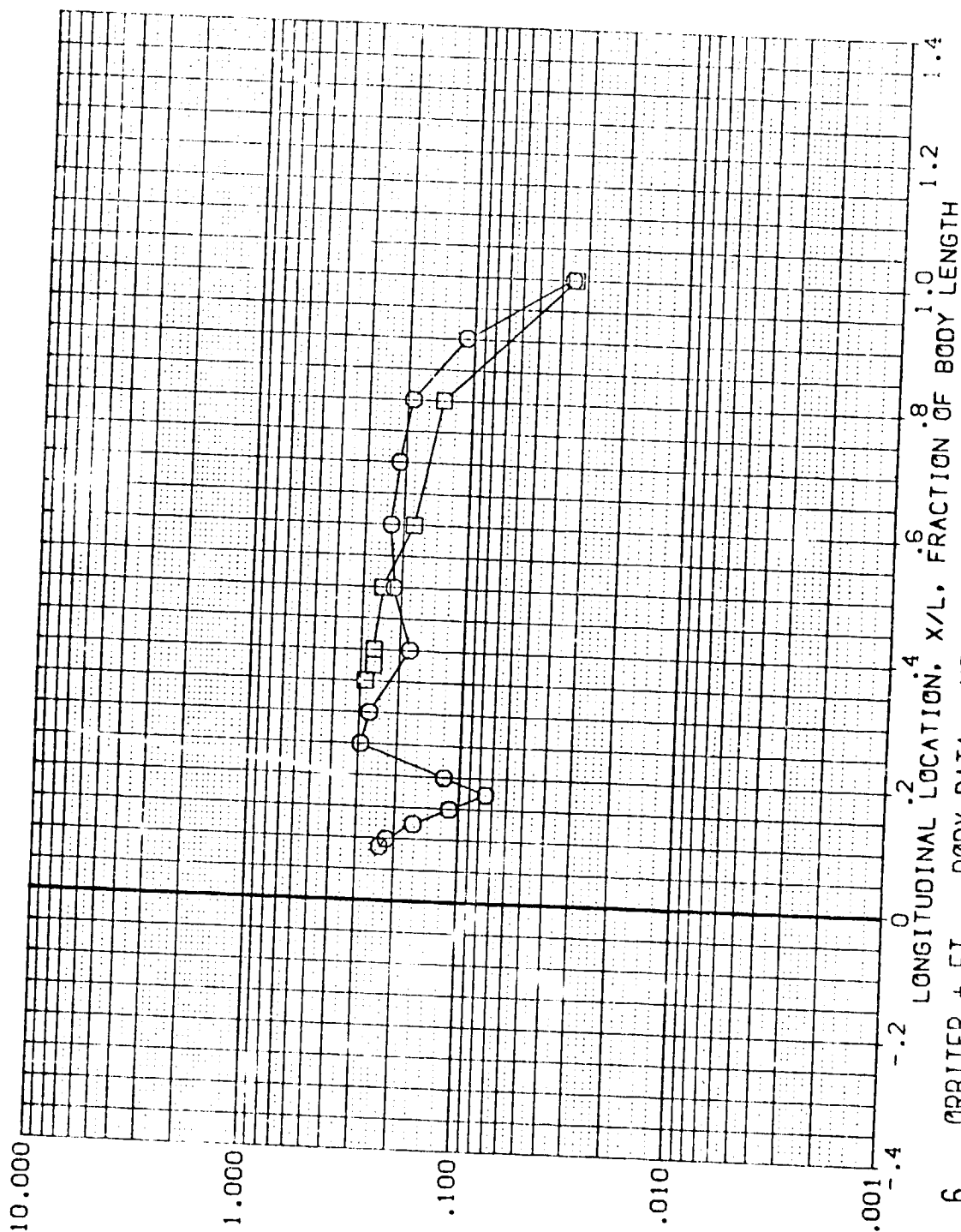


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

IH18 810C5D7W87M3F4V5 T8 ORBITER FUSELAGE (RQMB01)
 PARAMETRIC VALUES
 ALPHA .000 BETA .000
 MACH 6.000 DELTAH .175
 SYMBOL Y(BP) HAW/HT RN/L
 70.000 .000 4.778

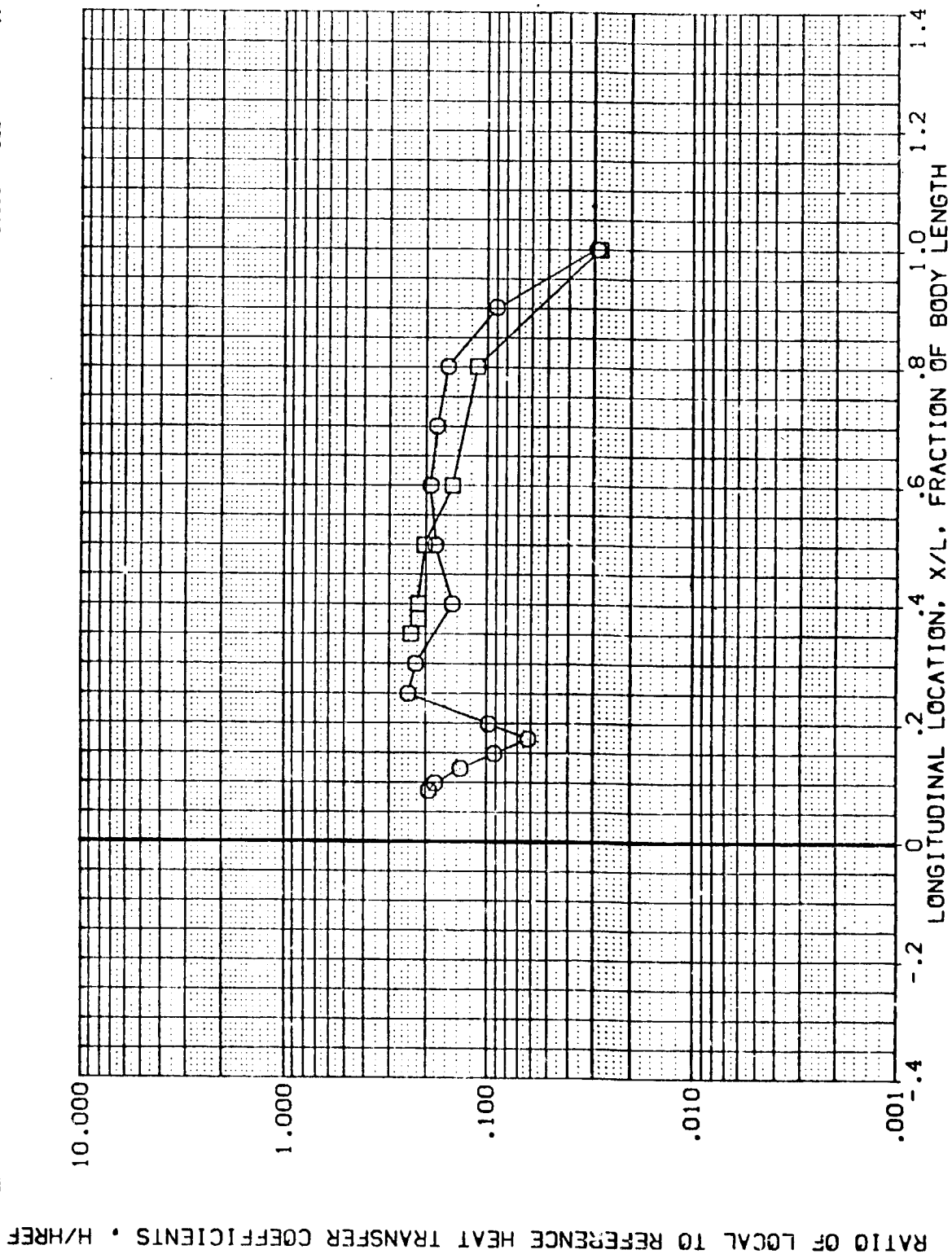


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 T8 ORBITER FUSELAGE (RCMB04)

SYMBOL	Y(3P)	HAW/HT	RN/L	PARAMETRIC VALUES
□	.000	.850	4.923	ALPHA
○	70.000			MACH
				BETA
				DELTA
				1.000
				1.15

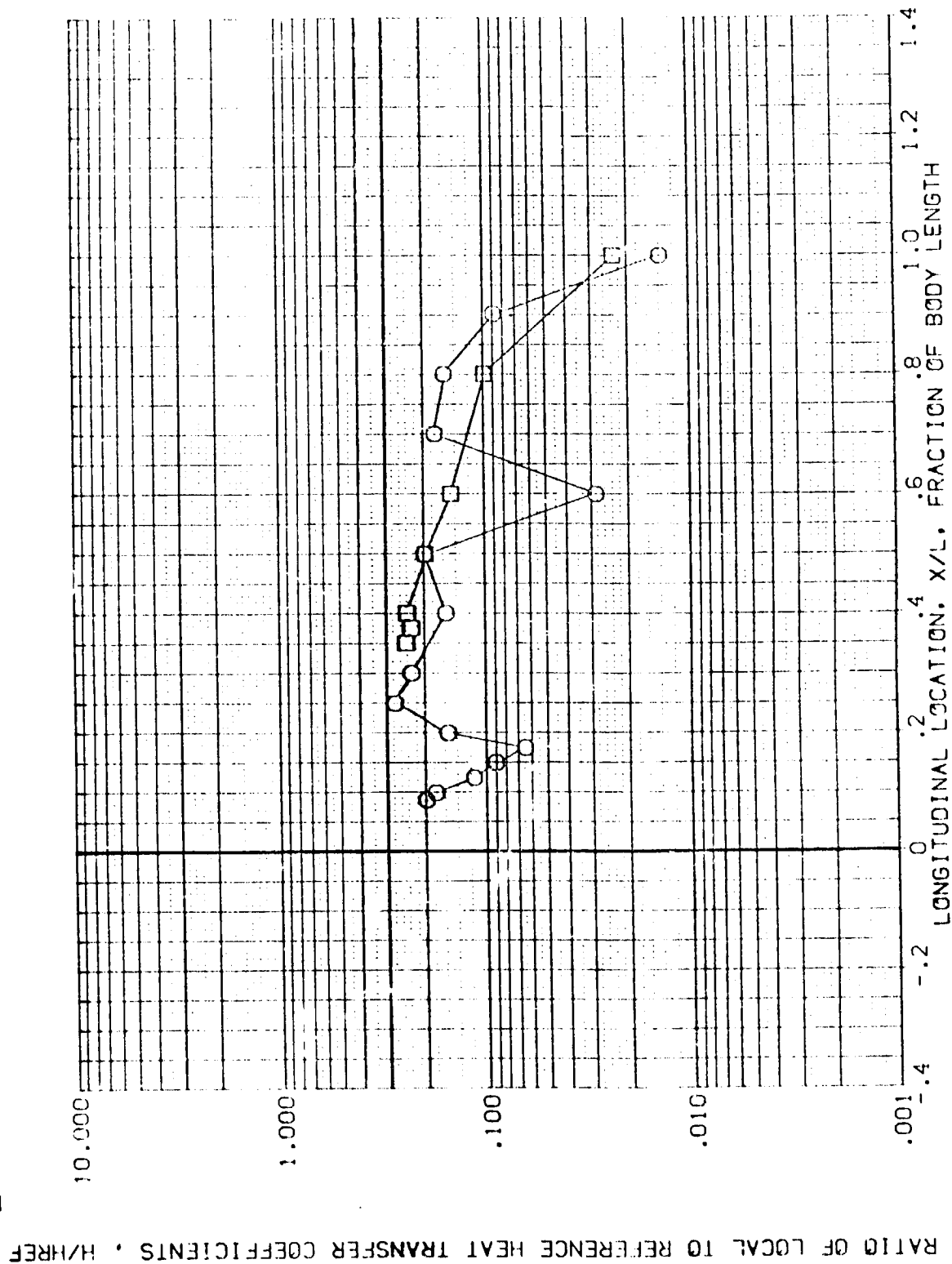


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

ORBITER FUSELAGE (RQMB04)

810C5D7W87M3F4V5 T8

IH18

PARAMETRIC VALUES
 ALPHA -5.000
 BETA 6.000
 DELTAH .175

Y(BP) .000
 HAW/HT .900
 RN/L 4.923

SYMBOL
 □
 ○

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

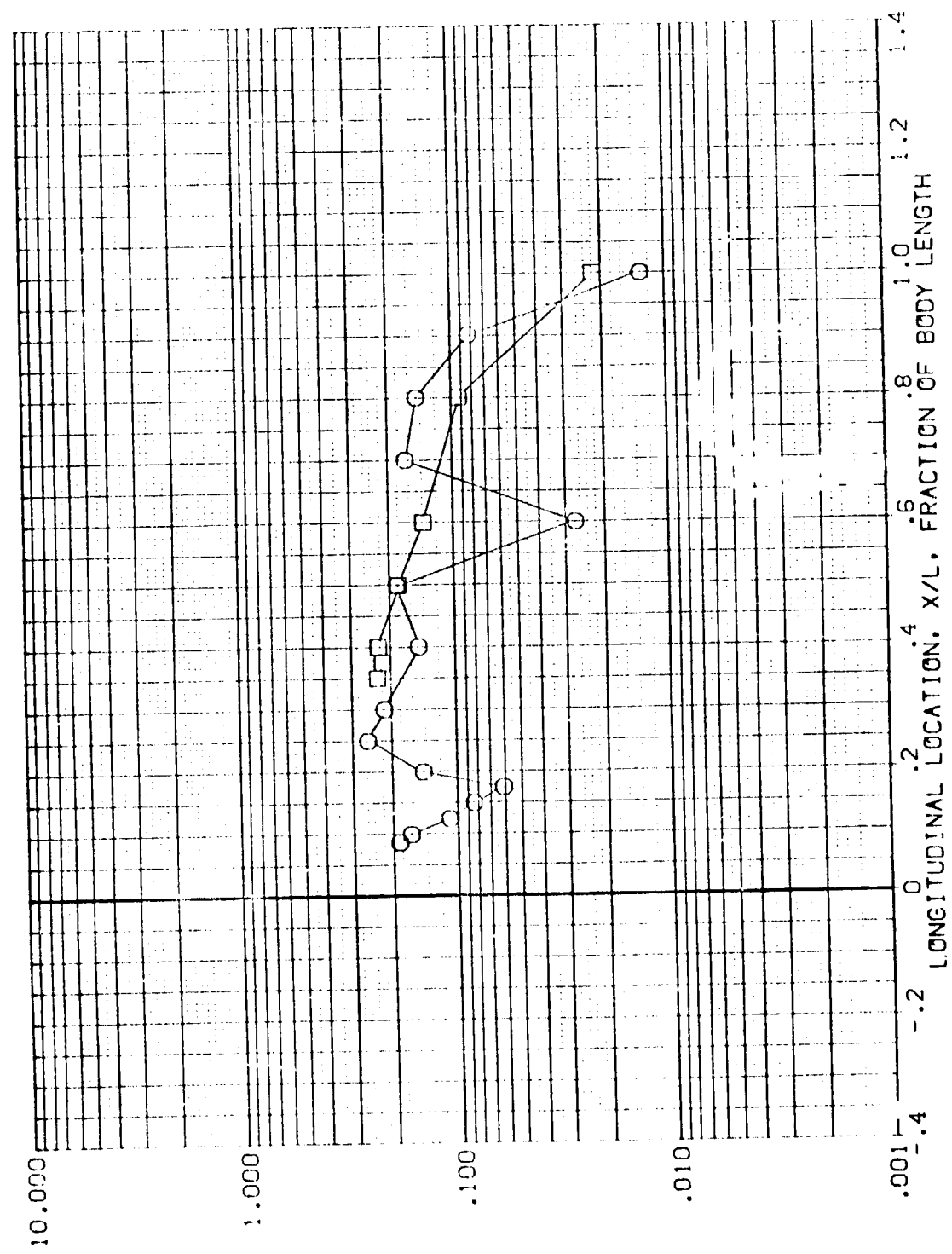


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

IH18 B10C507W87M3F4V5 T8 ORBITER FUSELAGE (RQMB04)

SYMBOL	Y(BP)	HAW/HT	RN/L	PARAMETRIC VALUES		
	.000	1.000	4.923	ALPHA	BETA	
	70.000			MACH	DELTAH	
						.000
						.175

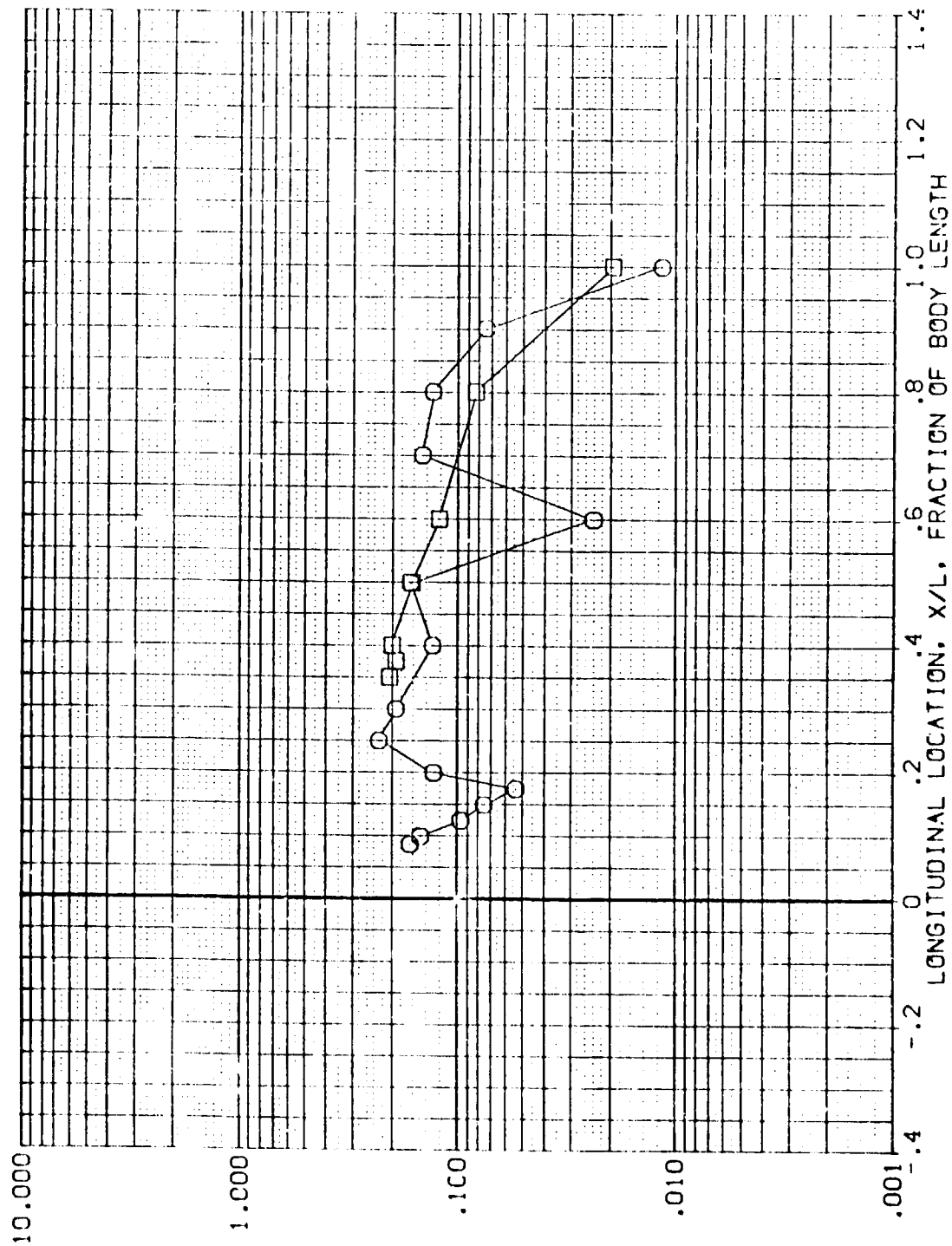


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

DATA SET SYMBOL: **Q** CONFIGURATION DESCRIPTION: ORBITER FUSELAGE MACH 6.000
 (RQ-901) :H18 810C5074873F4V5 T8 BETA .000 ALPHA .000
 (RQ-804) :H18 810C5074873F4V5 T8 ORBITER FUSELAGE .000 -5.000 6.000

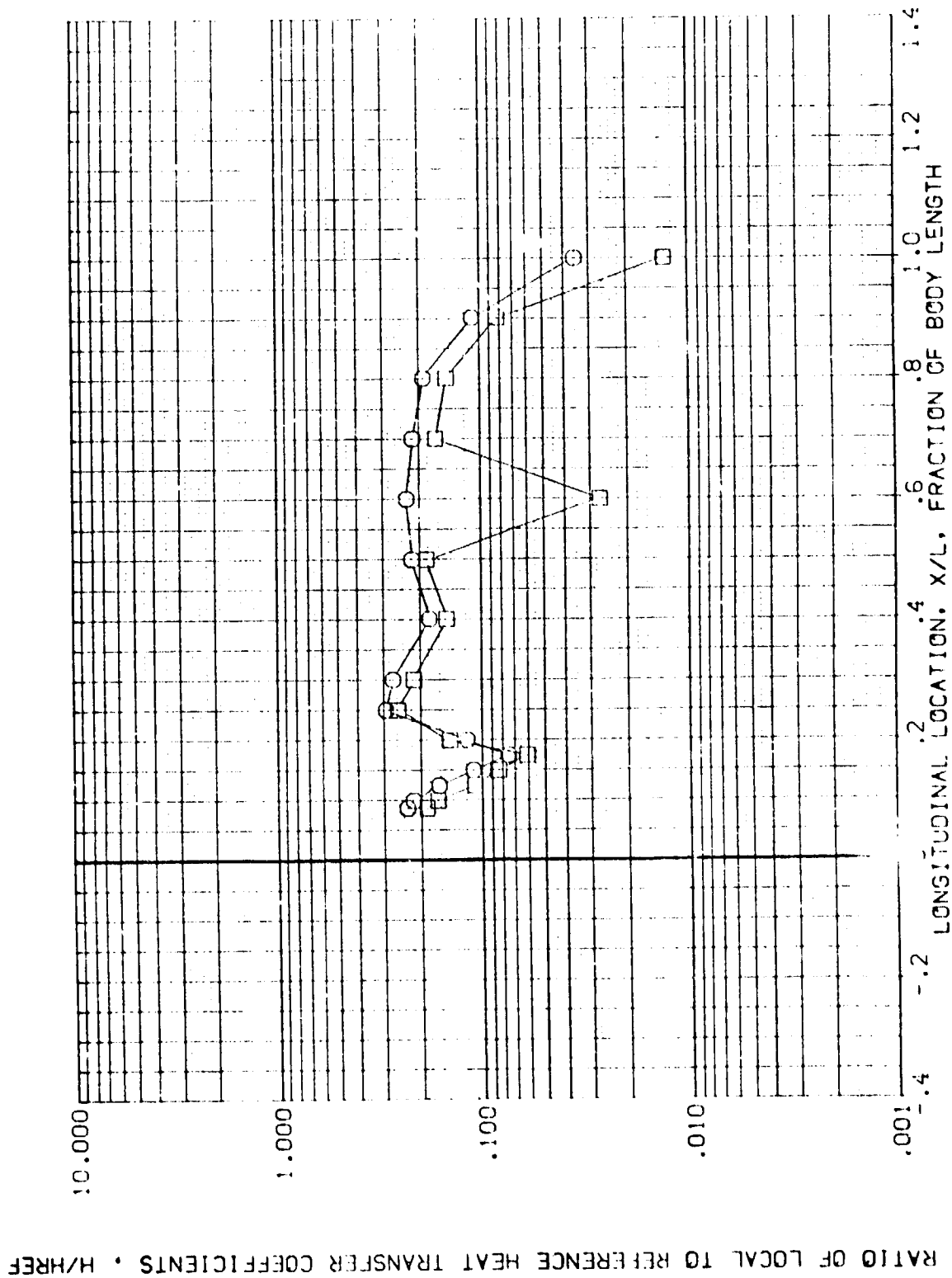


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

RN/L = 4.778 HAW/HT = .85C Y(BP) = .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R04801) 8 IM18 910C507487M3F4V5 T8
 (R04804) IM18 910C507487M3F4V5 T8

ORBITER FUSELAGE
 ORBITER FUSELAGE
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

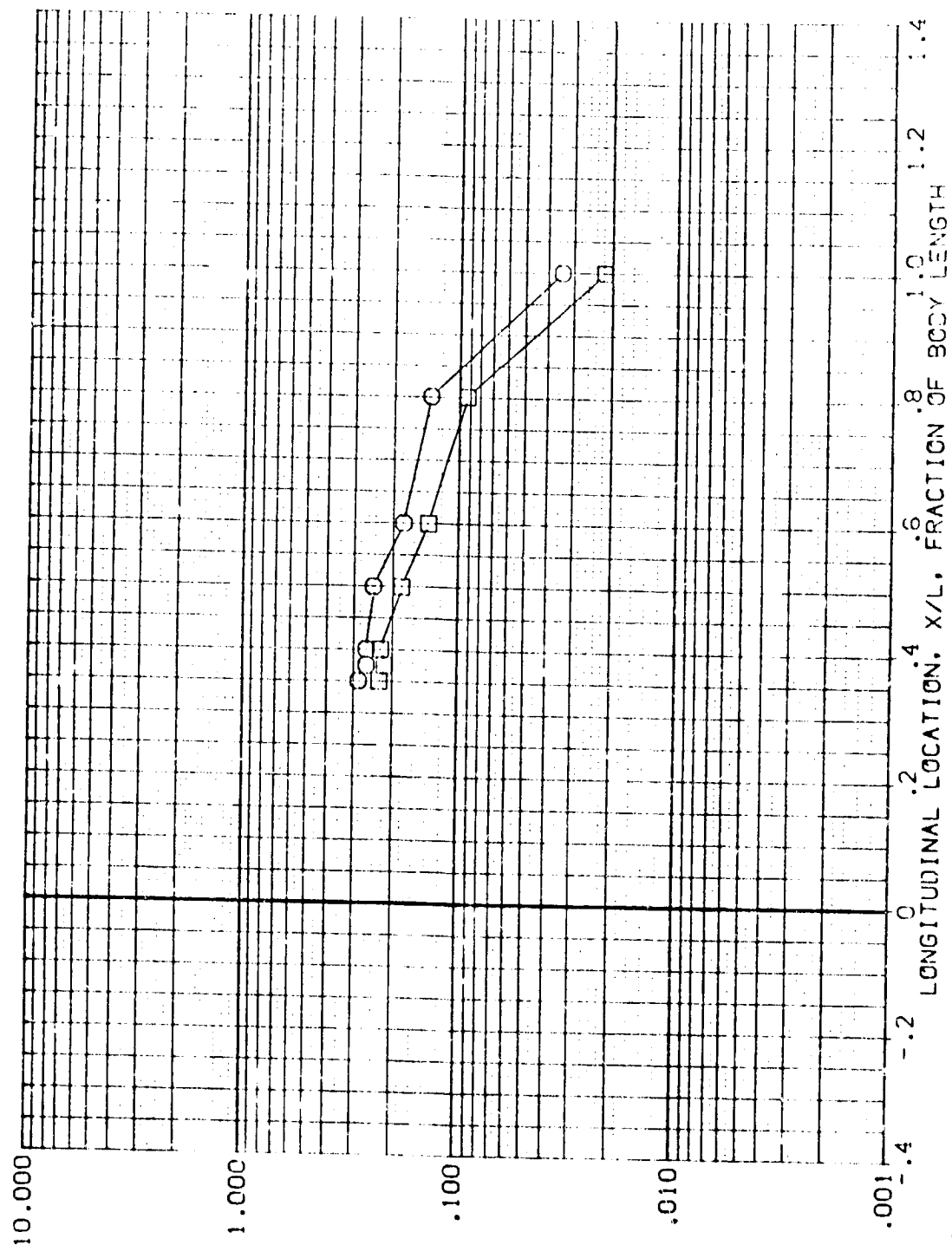


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

RN/L = 4.778 HAW/HT = .850 $Y(BP) = 70.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION ORBITER FUSELAGE BETA ALPHA MACH
 (RC-B01) 81C507W87M3F4V5 T8 .000 .000 6.000
 (RC-B04) 81C507W87M3F4V5 T8 .000 -5.000 6.000

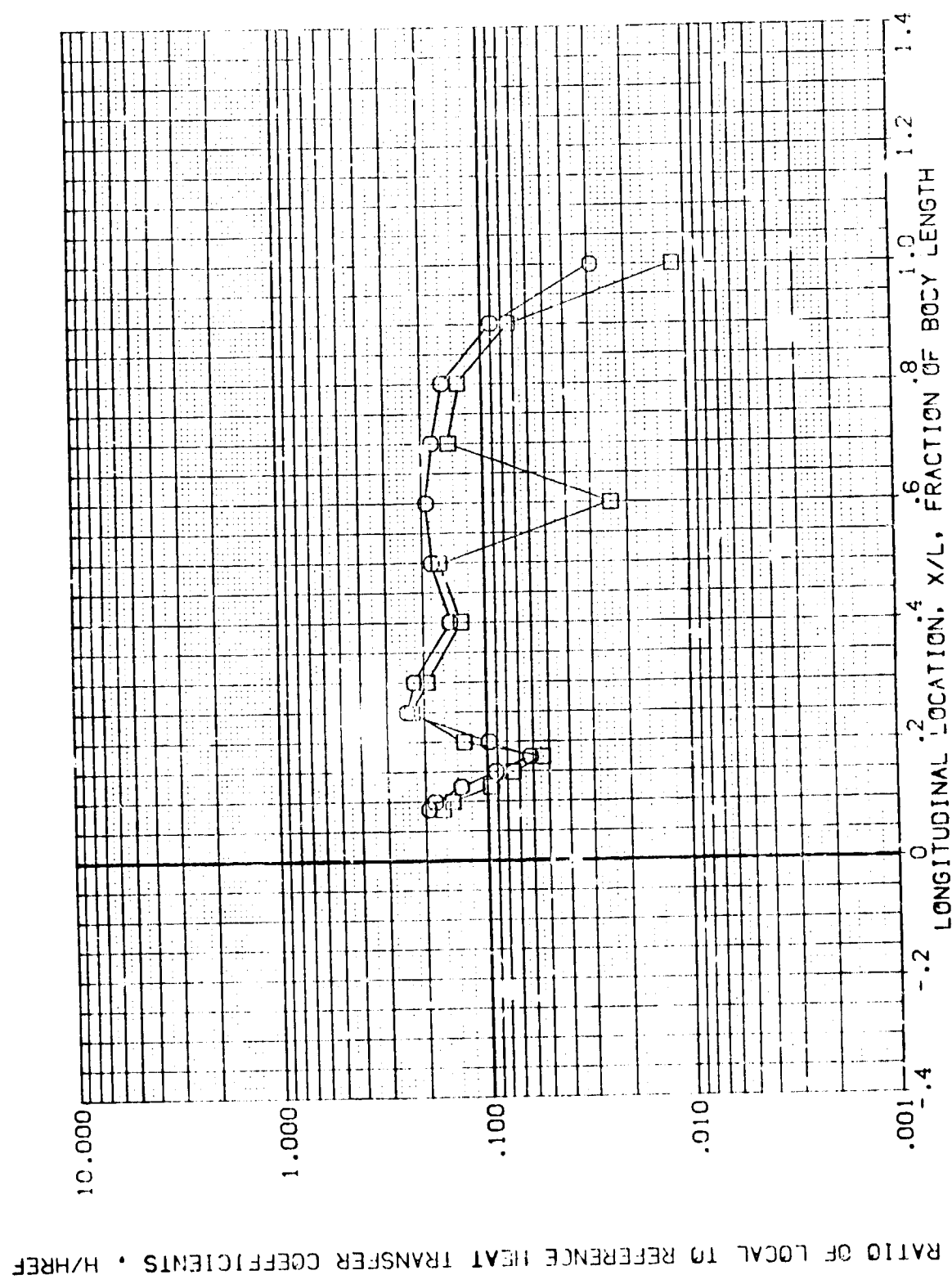


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS

RN/L = 4.778 P'AW/HT = 1.000 Y(BP) = .000

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(RQMB01)	IN18 810C5D7W87M3F4V5 T8	.000	.000	6.000
(RQMB04)	IN18 810C5D7W87M3F4V5 T8	.000	-5.000	6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

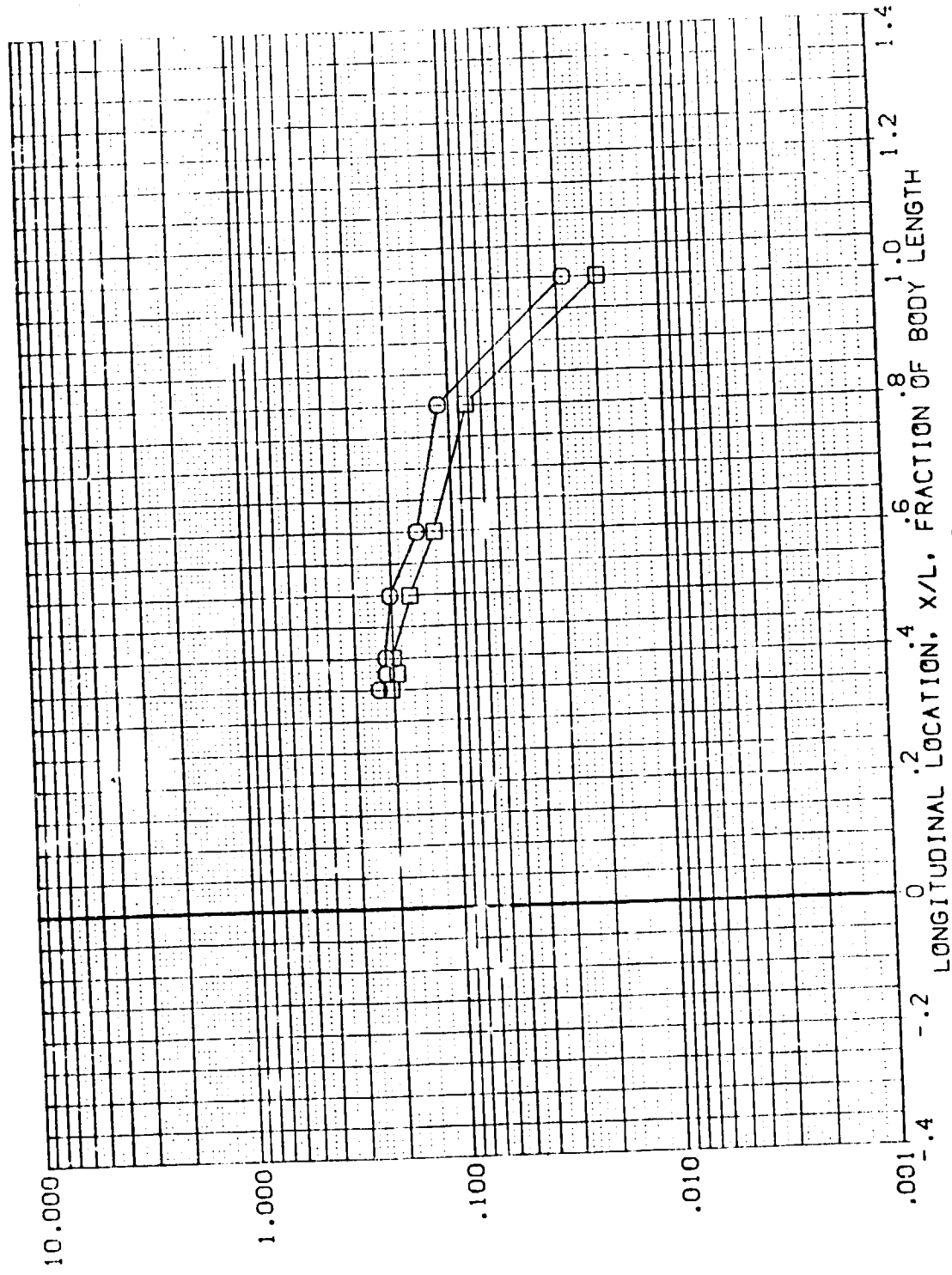


FIG 6 ORBITER + ET - BODY DATA - NO TRIPS
 RN/L = 4.778 HAW/HT = 1.000 Y(BP) = 70.000

IH18 B10C507W87M3F4V5 18 X26 ORBITER FUSELAGE (RQMB05)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .047

SYMBOL \square \circ
 Y(BP) .000
 70.000
 HAW/HT .850
 RN/L 4.700

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

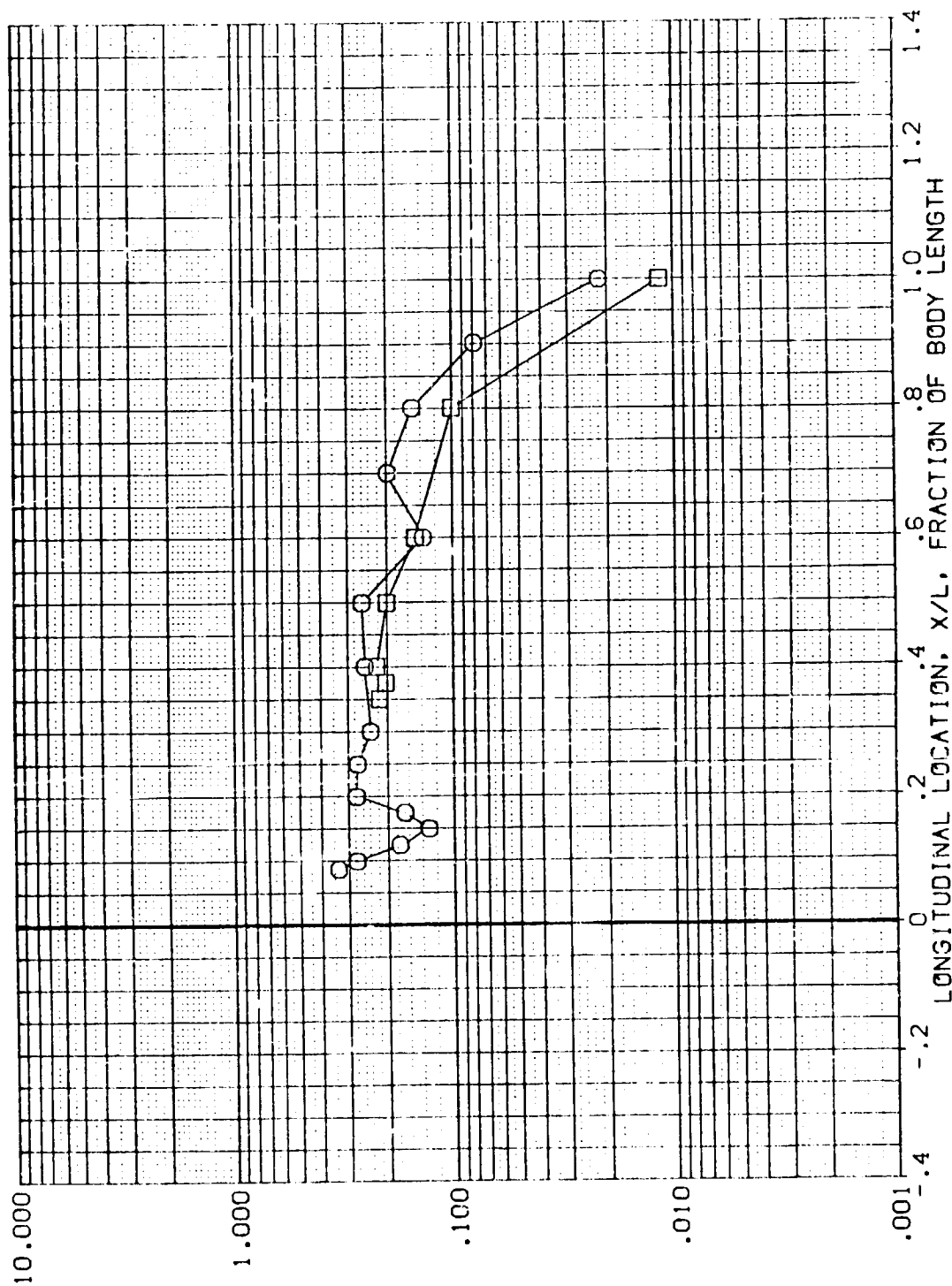


FIG 7 ORBITER + ET - BODY DATA - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB05)

SYMBOL	Y(BP)	MAW/HT	RN/L	PARAMETRIC VALUES
□	.000	.900	4.700	ALPHA
□	70.000			BETA
				MACH
				DELTA H
				X-HT
				.047
				.000
				.175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

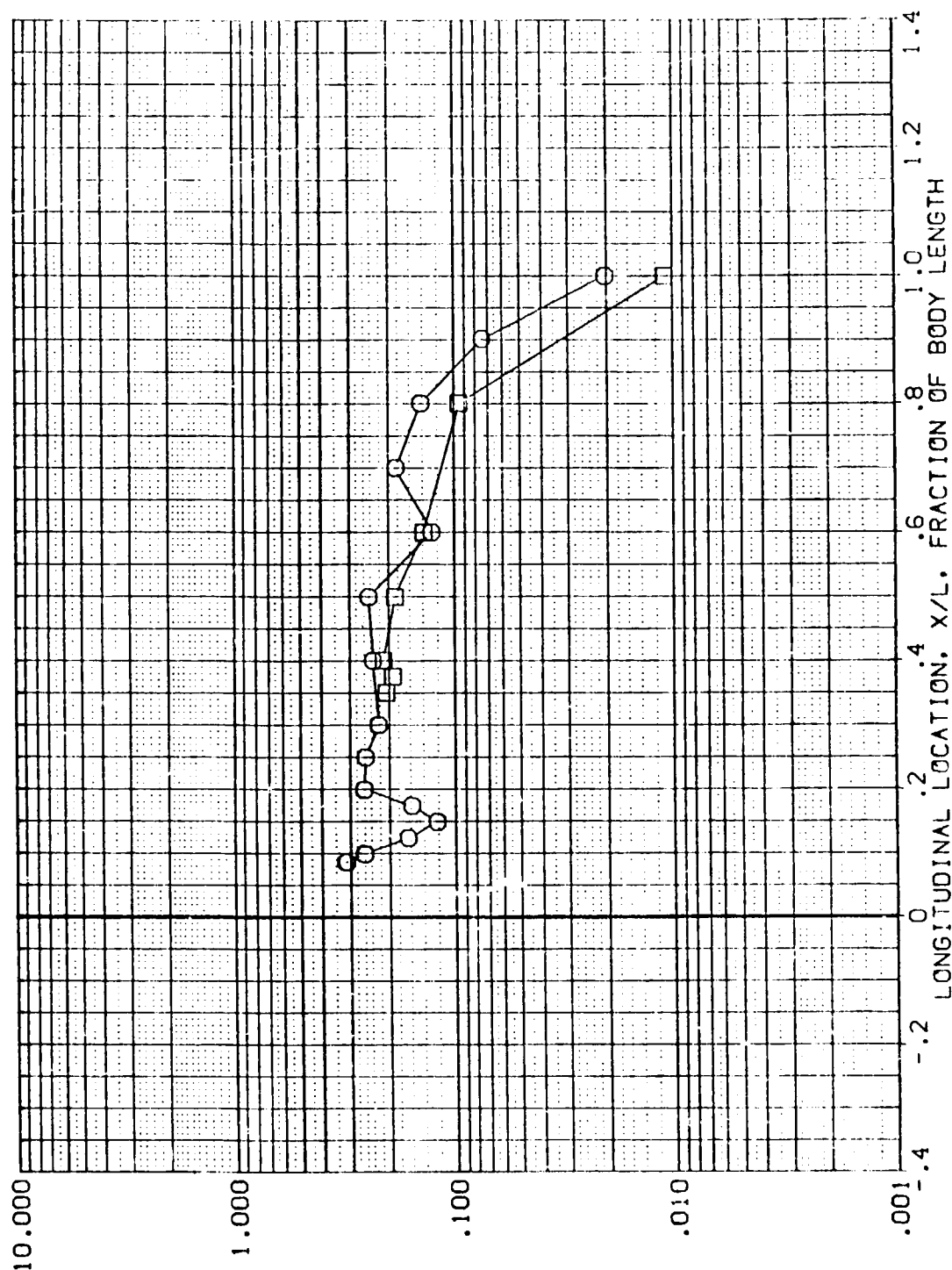


FIG 7 ORBITER + ET - BODY DATA - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (R0MB05)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .047

SYMBOL Y(BP) H/W/HT MN/L
 .000 1.000 4.700
 70.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

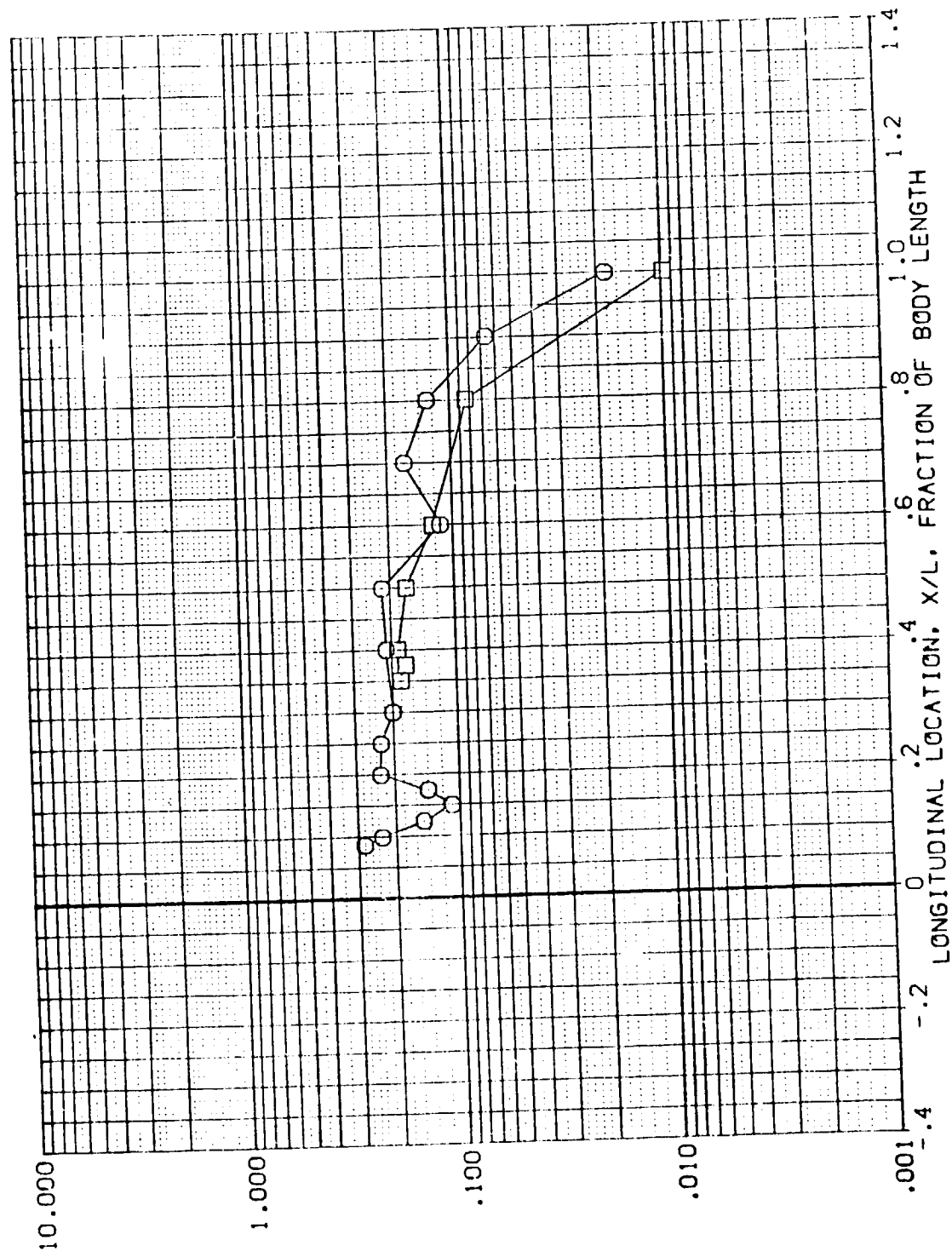


FIG 7 ORBITER + ET - BODY DATA - LARGE TRIPS

IHI8 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB11)

SYMBOL	Y (BP)	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	DELTA	HT
□	.000	.850	4.728	.000	.000	.175	.000
○	70.000			6.000	.031		

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

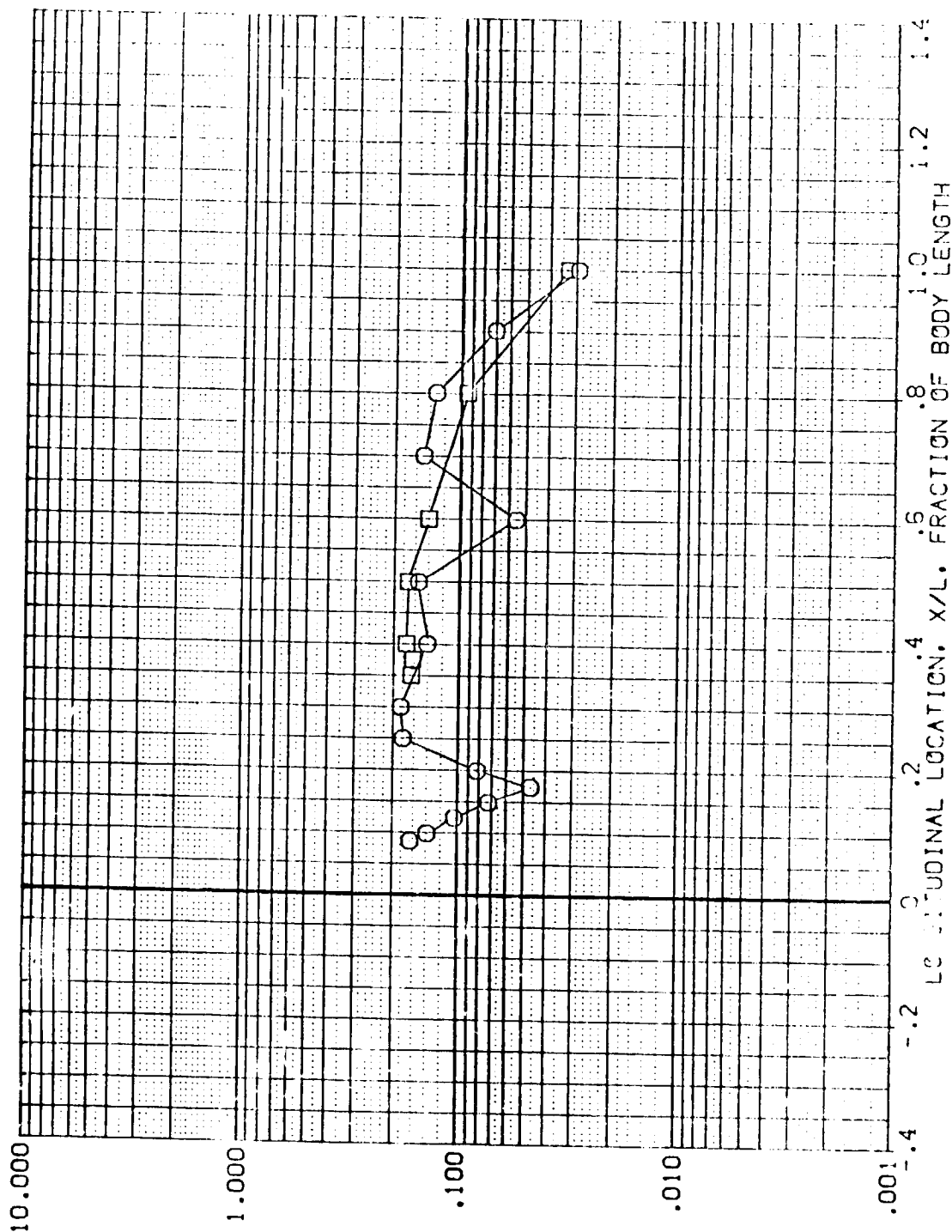


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

1H15 B10C507W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB11)

SYMBOL	Y(BP)	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	DELTA	X-HT
□	.000	.900	4.728	.000	.000	.031	.175
○	70.000			6.300			

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

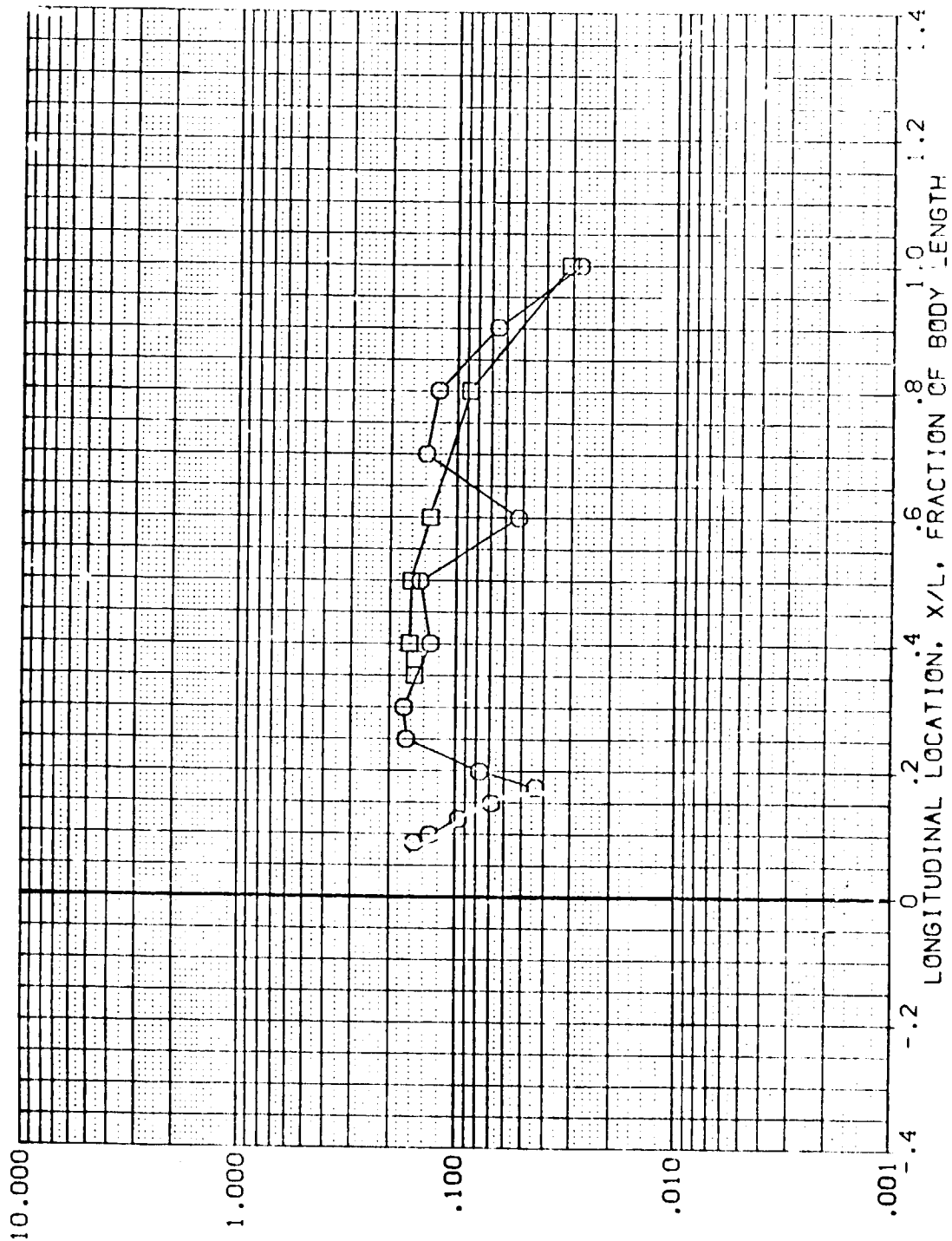


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB11)

SYMBOL	Y(CBP)	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	DELTA	H
○	.000	1.000	4.728	6.000	.031	.000	.000
□	70.000			X-HT		.175	

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

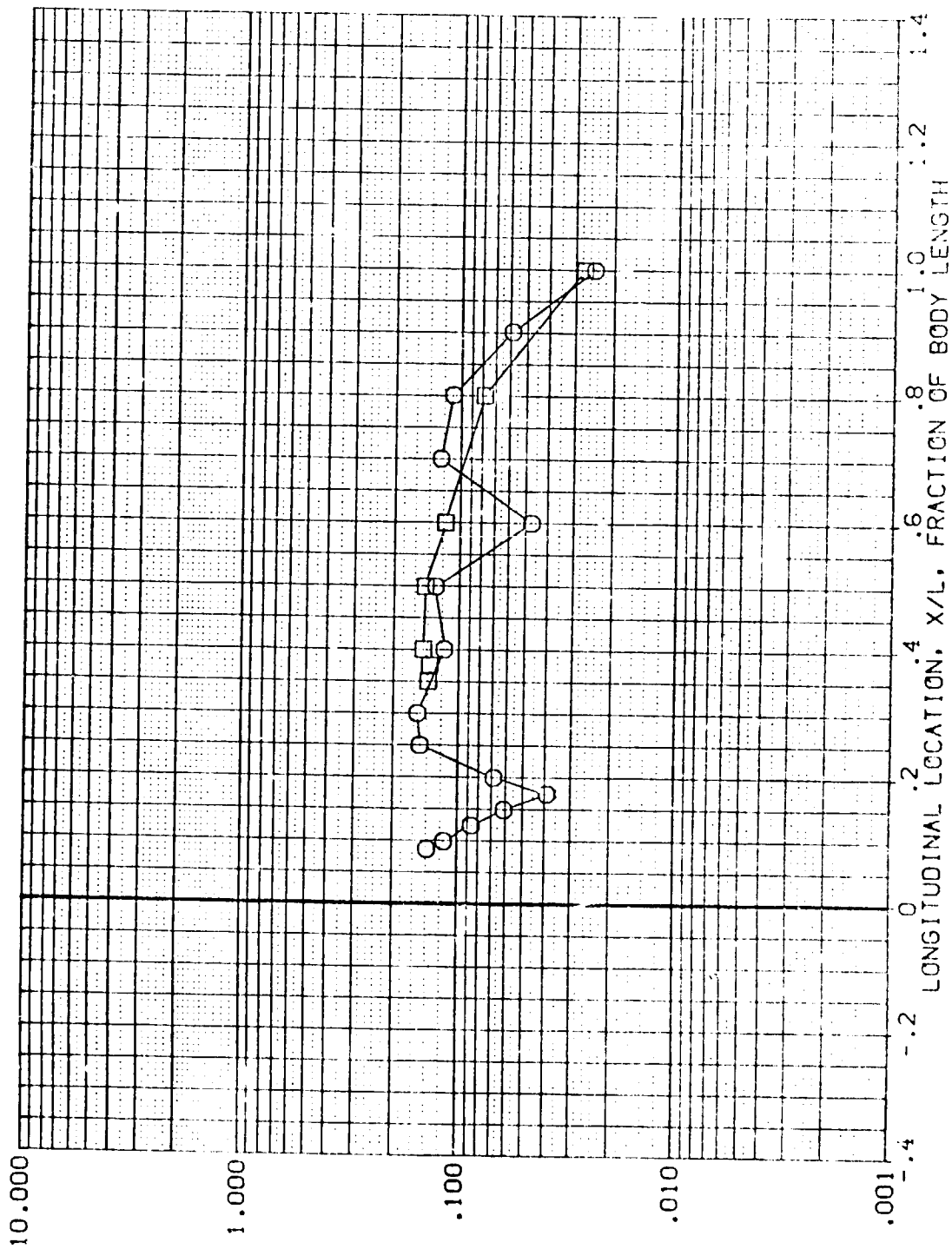


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB18)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .031

SYMBOL Y(BP) HAW/HT RN/L
 □ .000 70.000 4.481

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

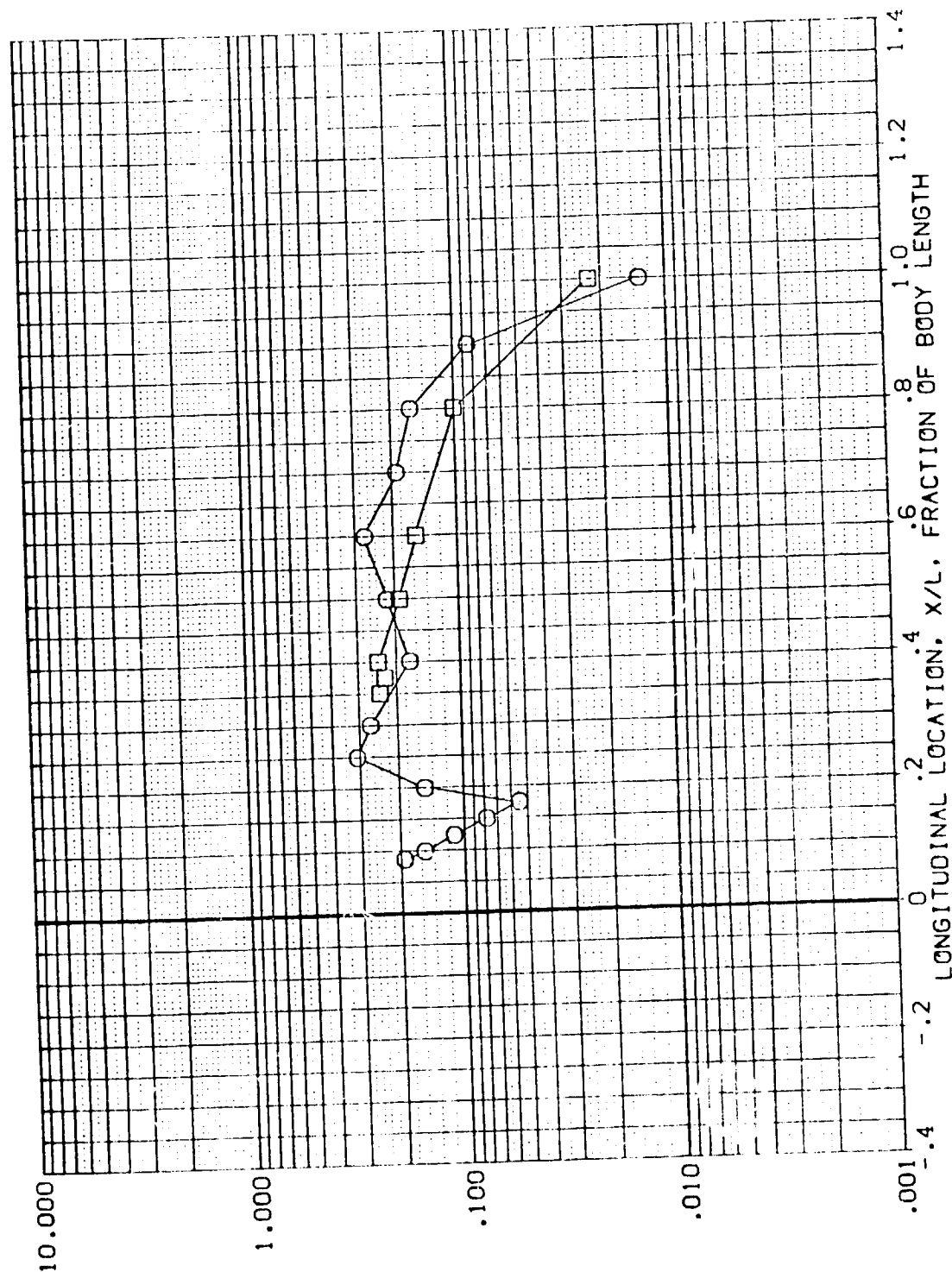


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB18)

SYMBOL	Y(BP)	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	CELTAN	.CCC
□	.000	.900	4.481	MACH	6.000	.175	
○	70.000			X-HT	.031		

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

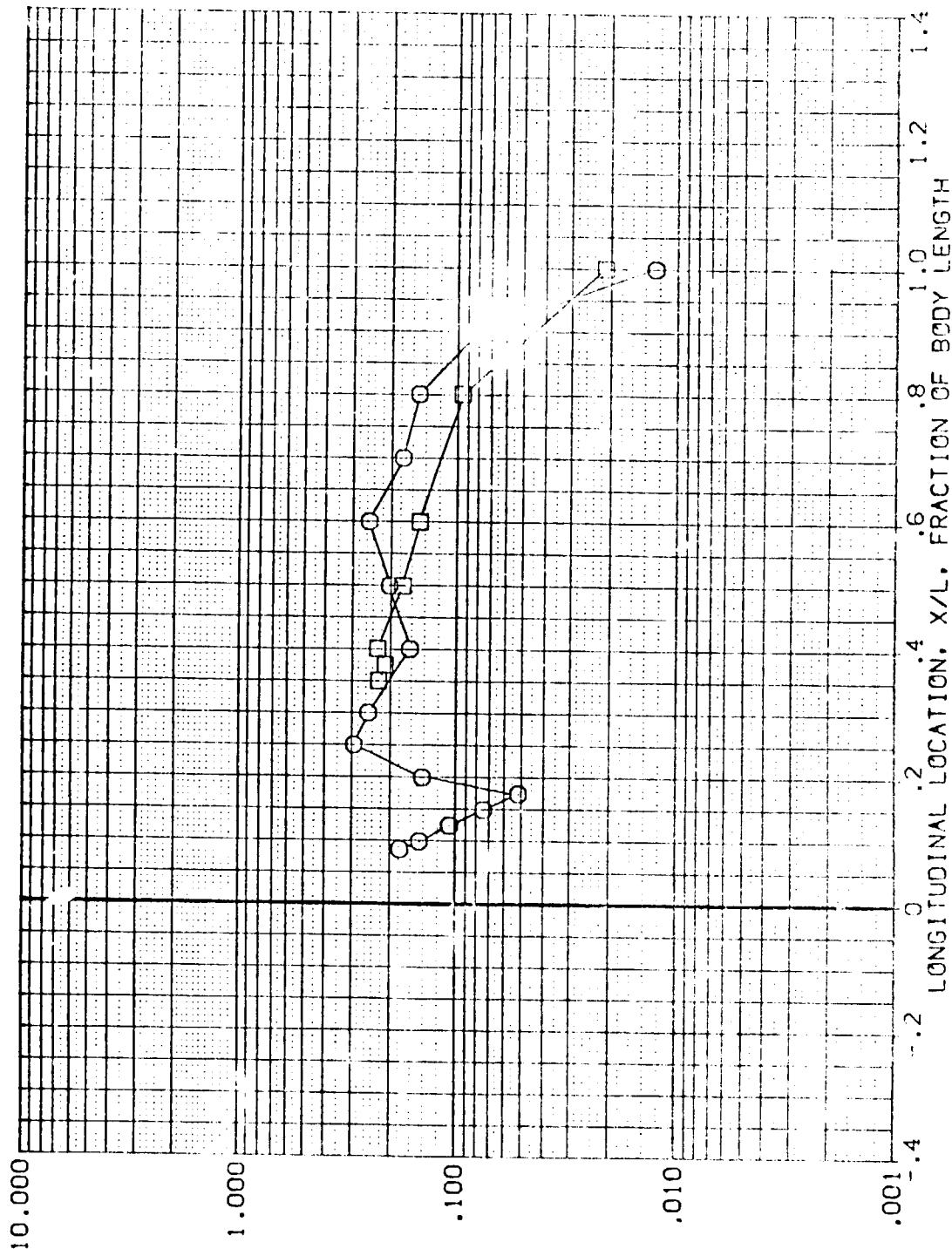


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

JH18 B10C5D7W87M3F4V5 T8 X26 ORBITER FUSELAGE (RQMB18)

SYMBOL	Y (BP)	HAW/HT	RN/L	PARAMETRIC VALUES		
				ALPHA	BETA	DELTAH
□	.000	1.000	4.481	MACH	5.000	.175
○	70.000			X-HT	.031	

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

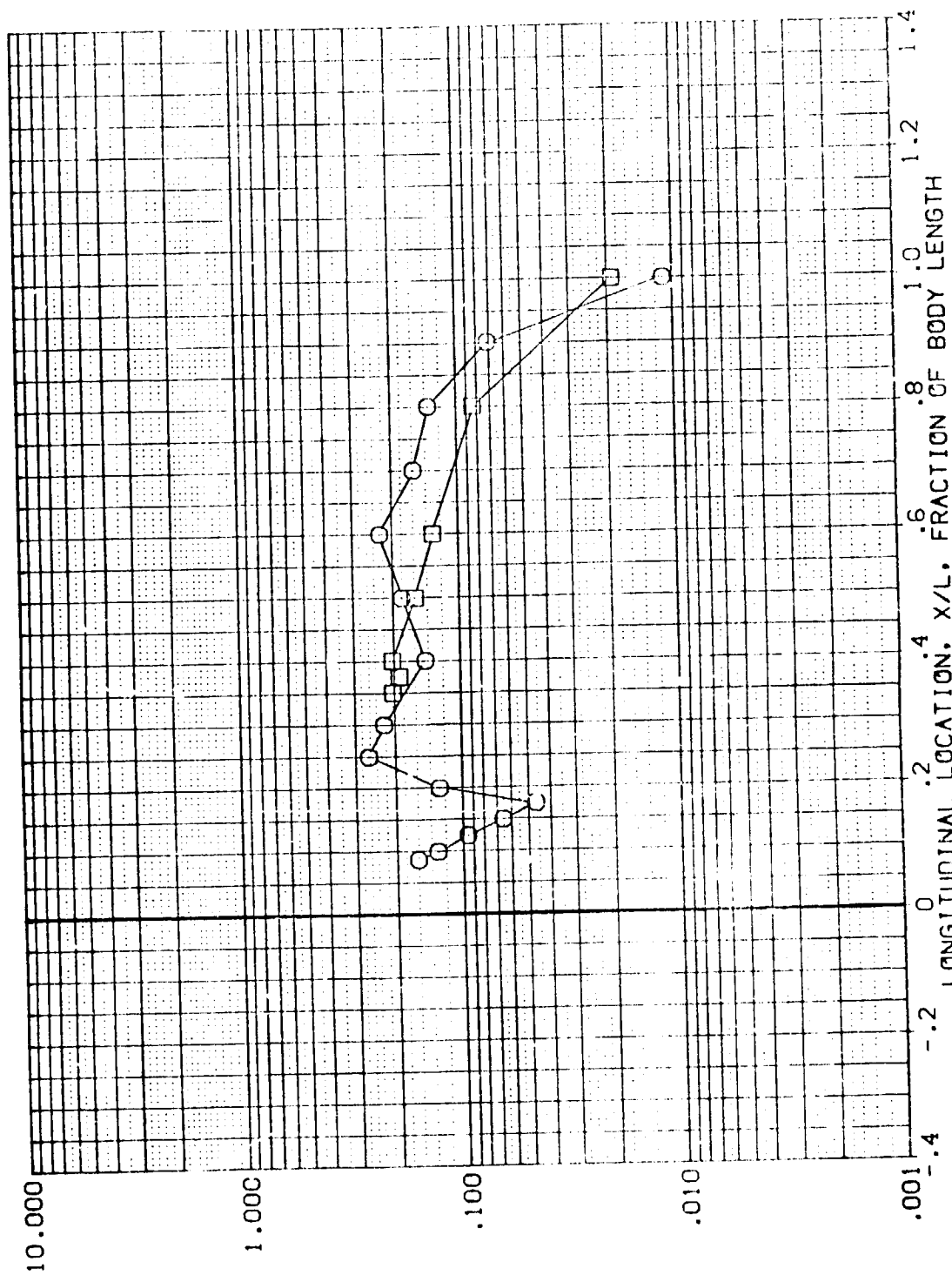


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0MB1:1) B10C507W87M3F4V3 T8 X26 ORBITER FUSELAGE .000 .000 6.000 .031

(R0MB1:8) B10C507W87M3F4V3 T8 X26 ORBITER FUSELAGE .000 -.5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

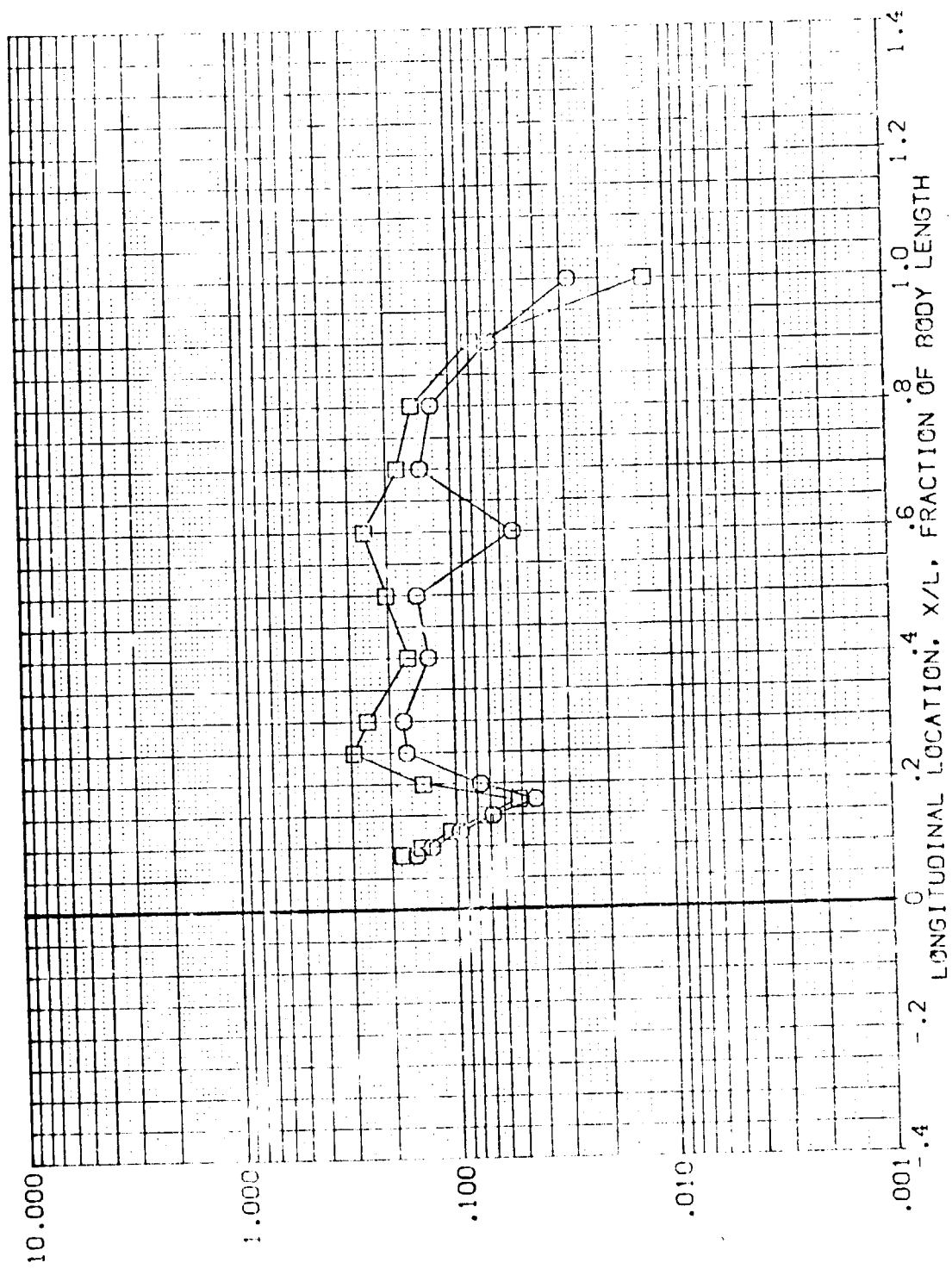


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = .850 (BP) = .000

DATA SET SYMBOL  CONFIGURATION DESCRIPTION
 (R0H11) 1H:8 B10C507#87M3F4V5 18 X26 ORBITER FUSELAGE
 (R0H318) 1H:8 B10C507#87M3F4V5 18 X26 ORBITER FUSELAGE

BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

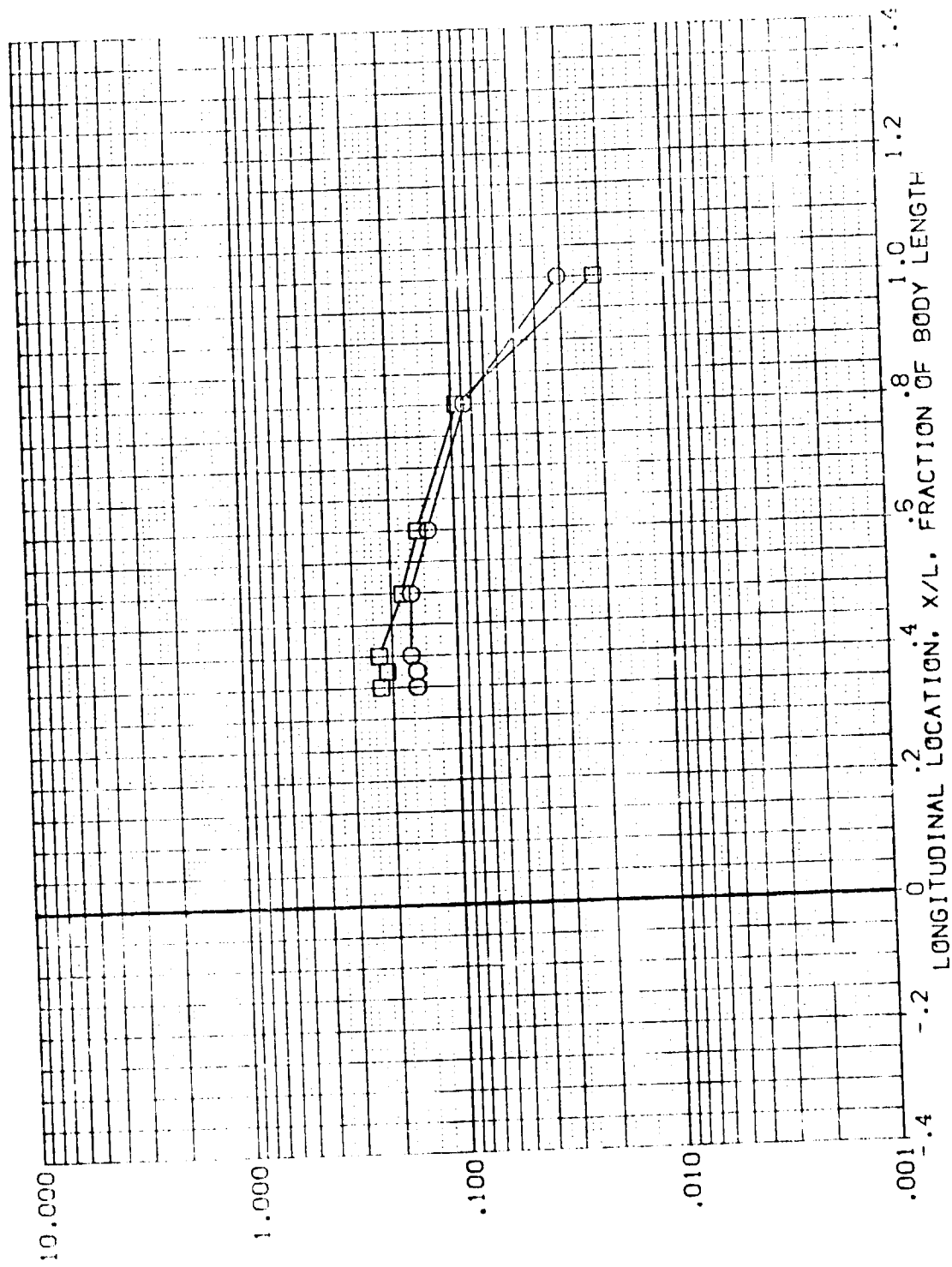


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = .850 Y(BP) = 70.000

BETA	ALPHA	MACH	X-47
.000	.000	6.000	.031
.000	-5.000	6.000	.031

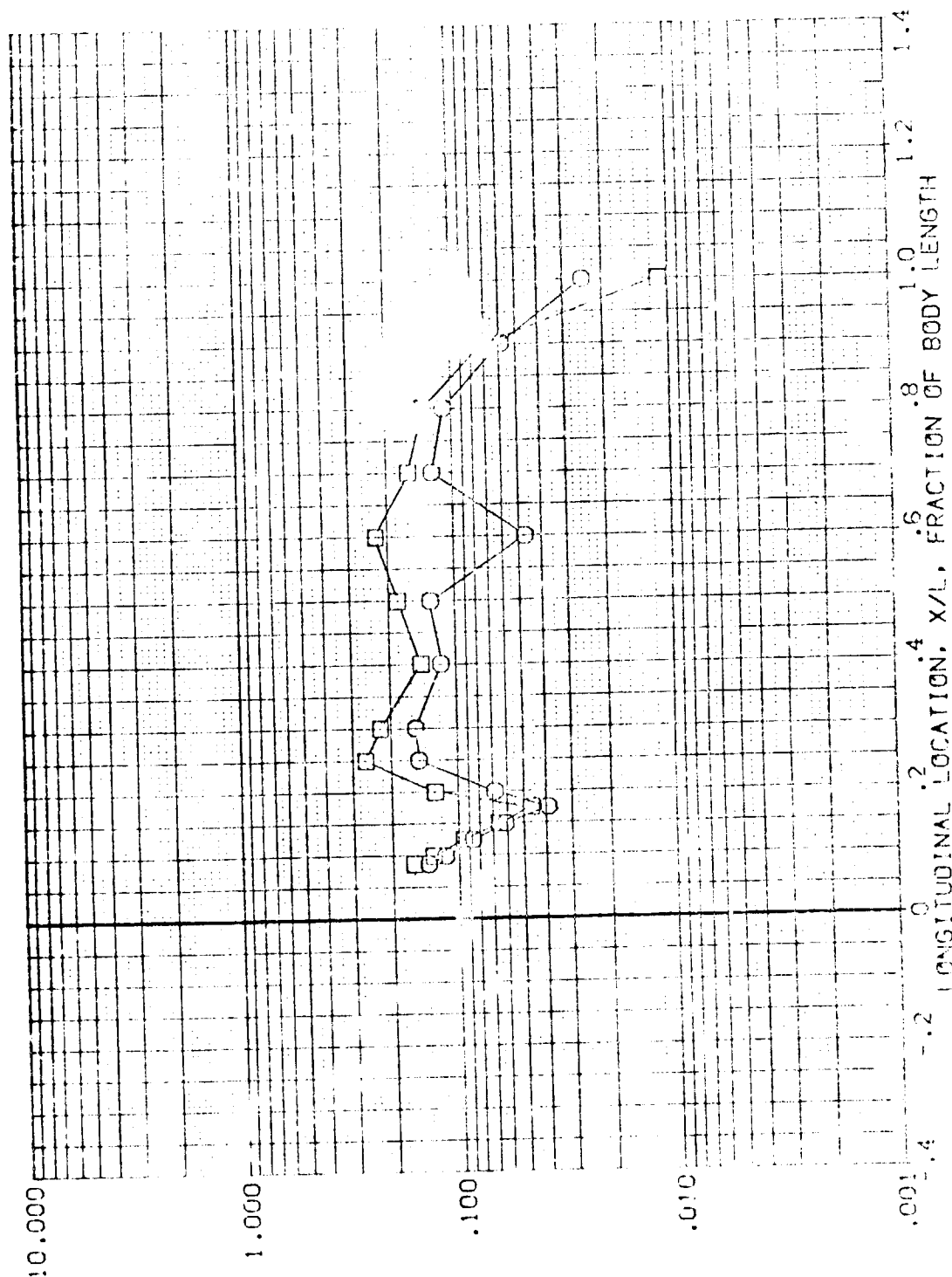


FIG. 3 CORBLIER + ET - BODY DATA - SMALL TRIPS

$\text{Y(BP)} =$	1.729	VAR/PRE	1.000	Y(BP)	= .000
$\text{CORREL} =$	8	CORREL Y & P	6001	SATA	SMALL

DATA SET ORIGIN CONFIGURATION DESCRIPTION
 1413 81015074374354V5 19 X28 ORBITER FUSELAGE
 1418 81015074374354V5 19 X28 ORBITER FUSELAGE

BETA ALPHA MACH X-HY
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

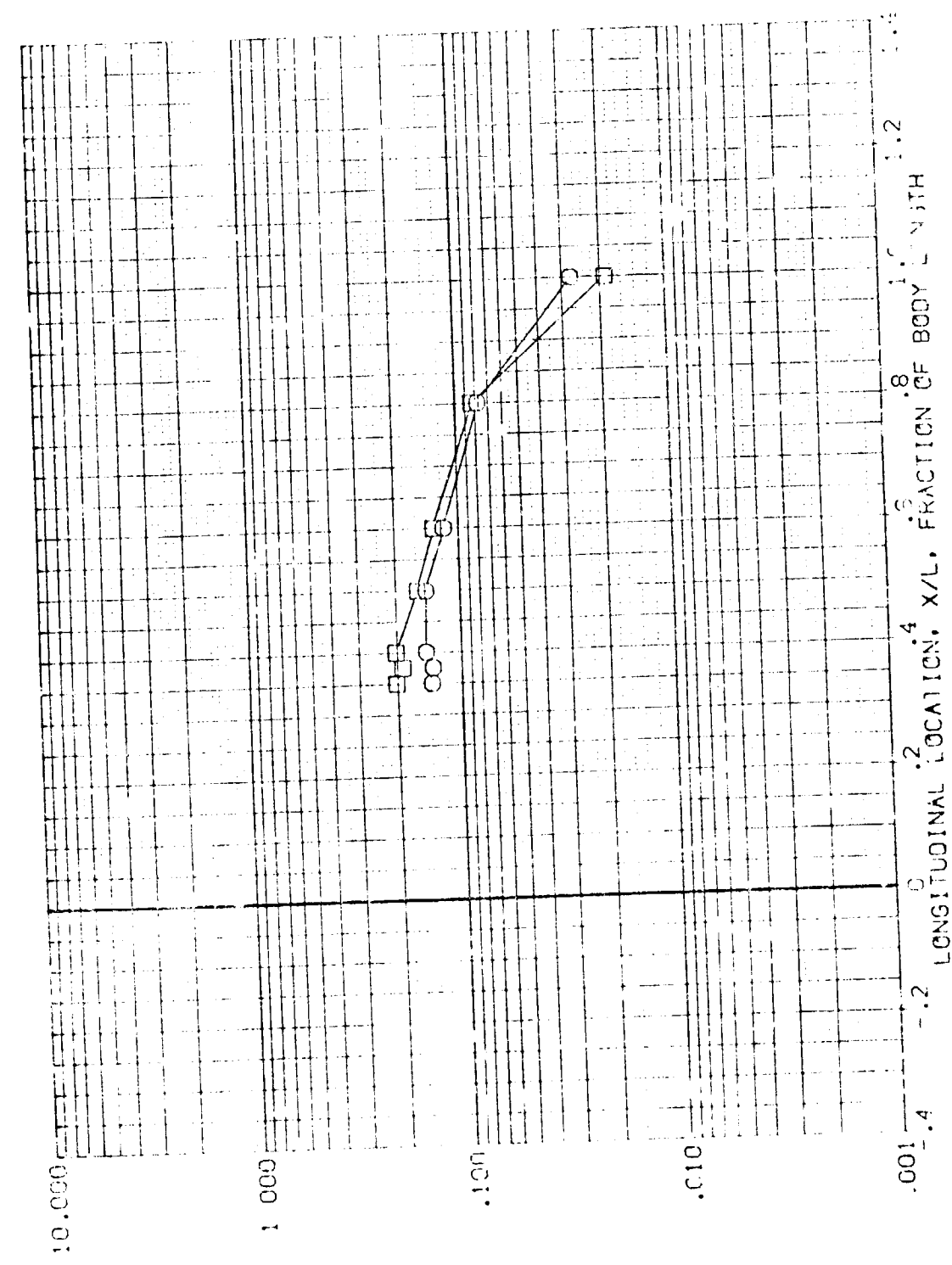


FIG 8 ORBITER + ET - BODY DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = 1.000 Y(BP) = 70.000

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

IH18 B100507W87M3F4V5

ORBITER WING CRQMWO1

STATION 21/8
 WEIGHT .650
 RAYL 5.315

PARAMETRIC VALUES
 ALPHA .700
 MACH 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

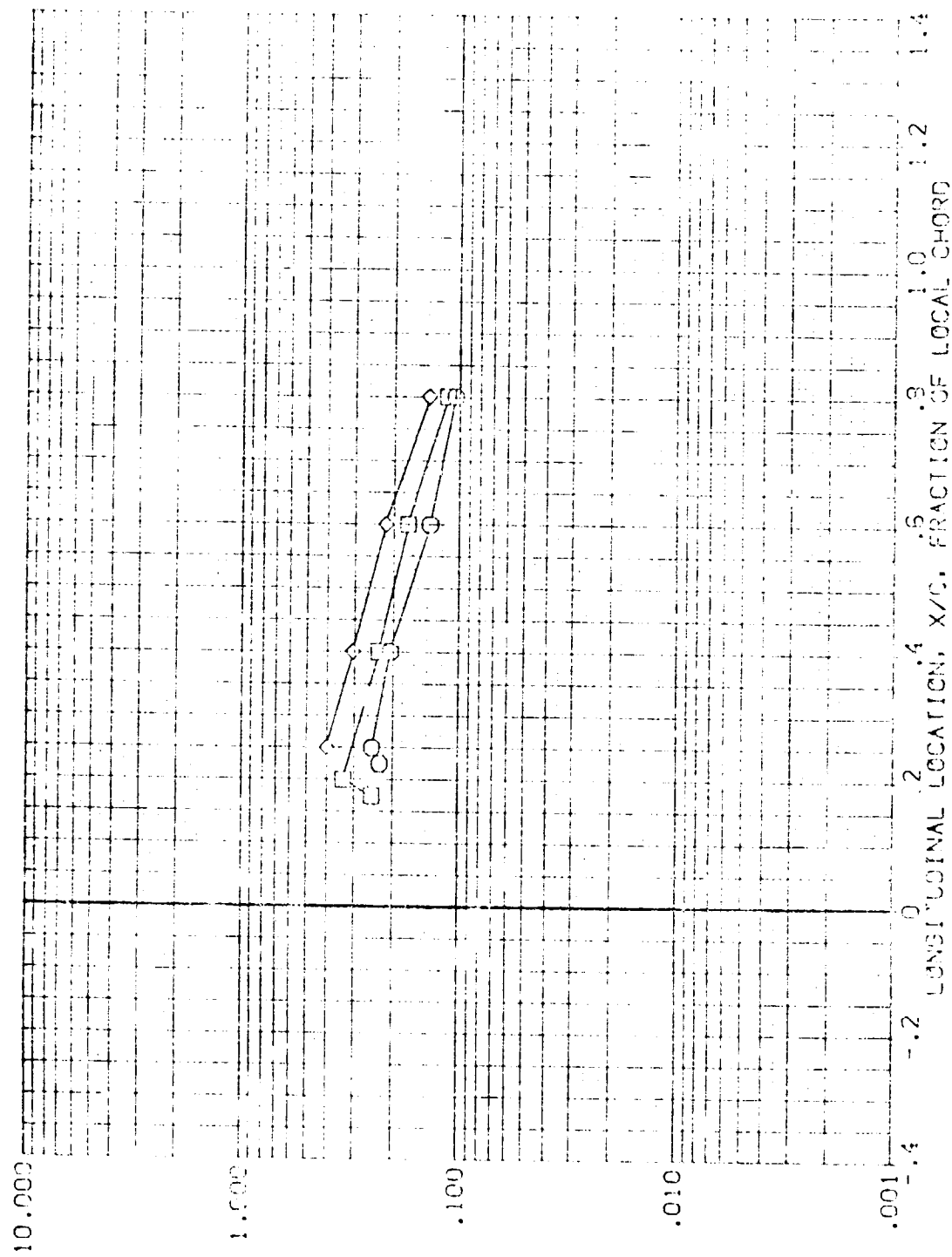


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

1418 810C507W87M3F4V5

ORBITER WING

(RQMWO7)

SYMBOL

21/3

WING/PT

RN/L

.000

.900

5.315

PARAMETRIC VALUES

.000

BETA

.000

ALPHA

MACH

6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

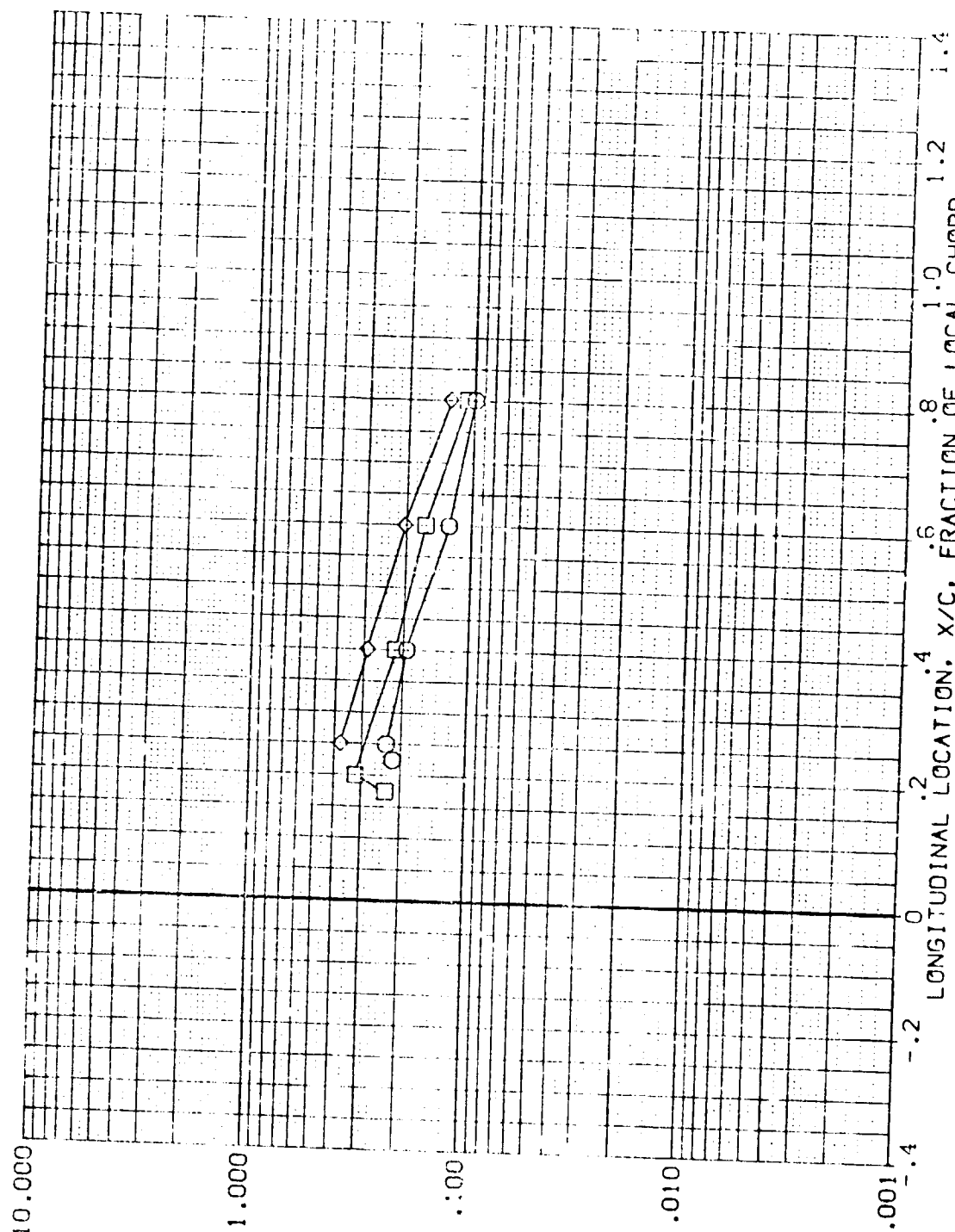


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

!H18 B100507W87M3F4V5

ORBITER WING

(RCHW07)

SYMBOL

2Y/8

HAH/HT

QV/L

5.315

.400

.800

.800

PARAMETRIC VALUES

ALPHA

5.000

MACH

5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

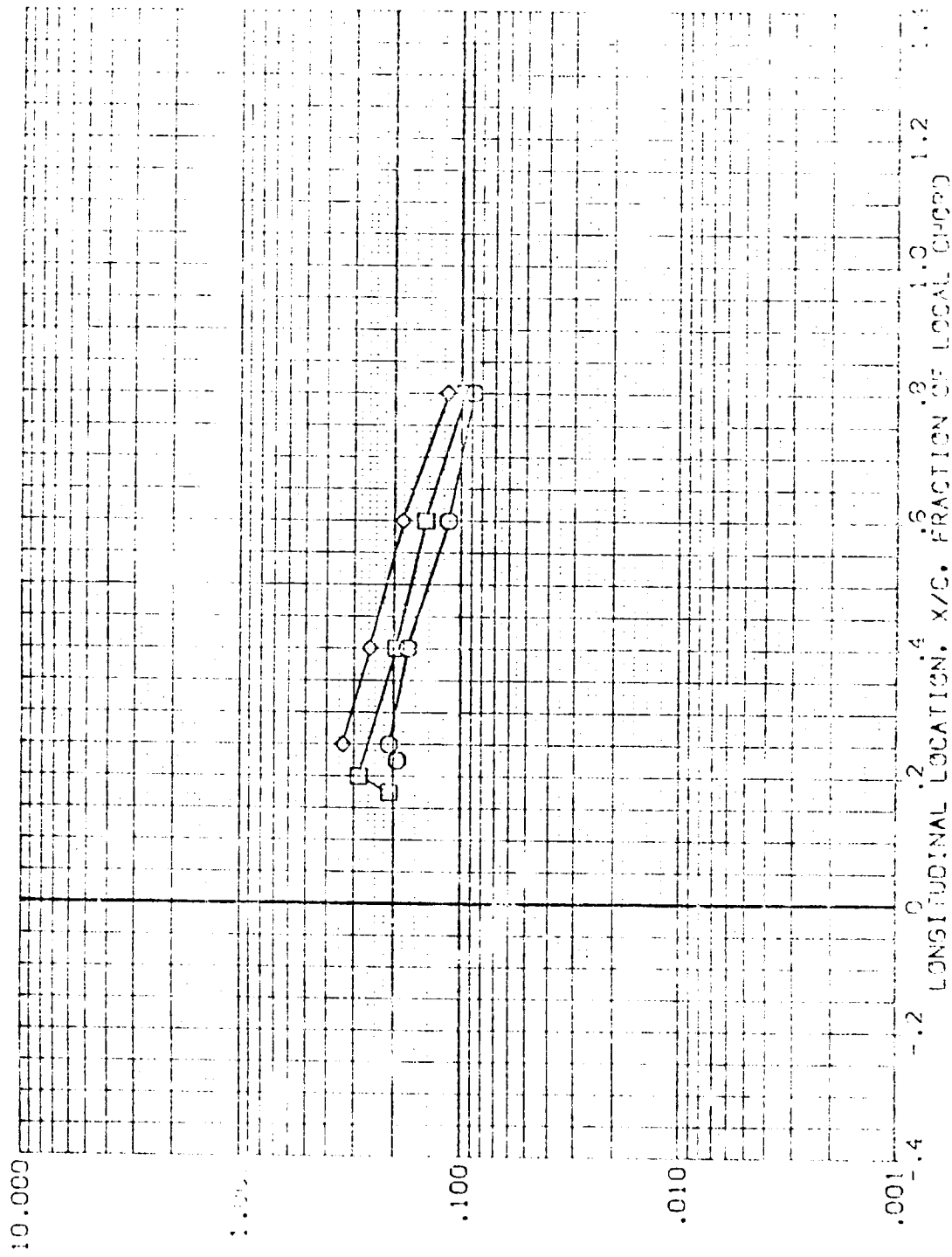


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

IH18 B10C507W.27M3F4V5

ORBITER WING

(RQMWC8)

SYMBOL
 ◊
 □
 ○

2Y/B
 .400
 .600
 .800

HA/WHT
 .850

RN/L
 4.533

PARAMETRIC VALUES
 ALPHA
 MACH
 -5.000
 6.000

.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

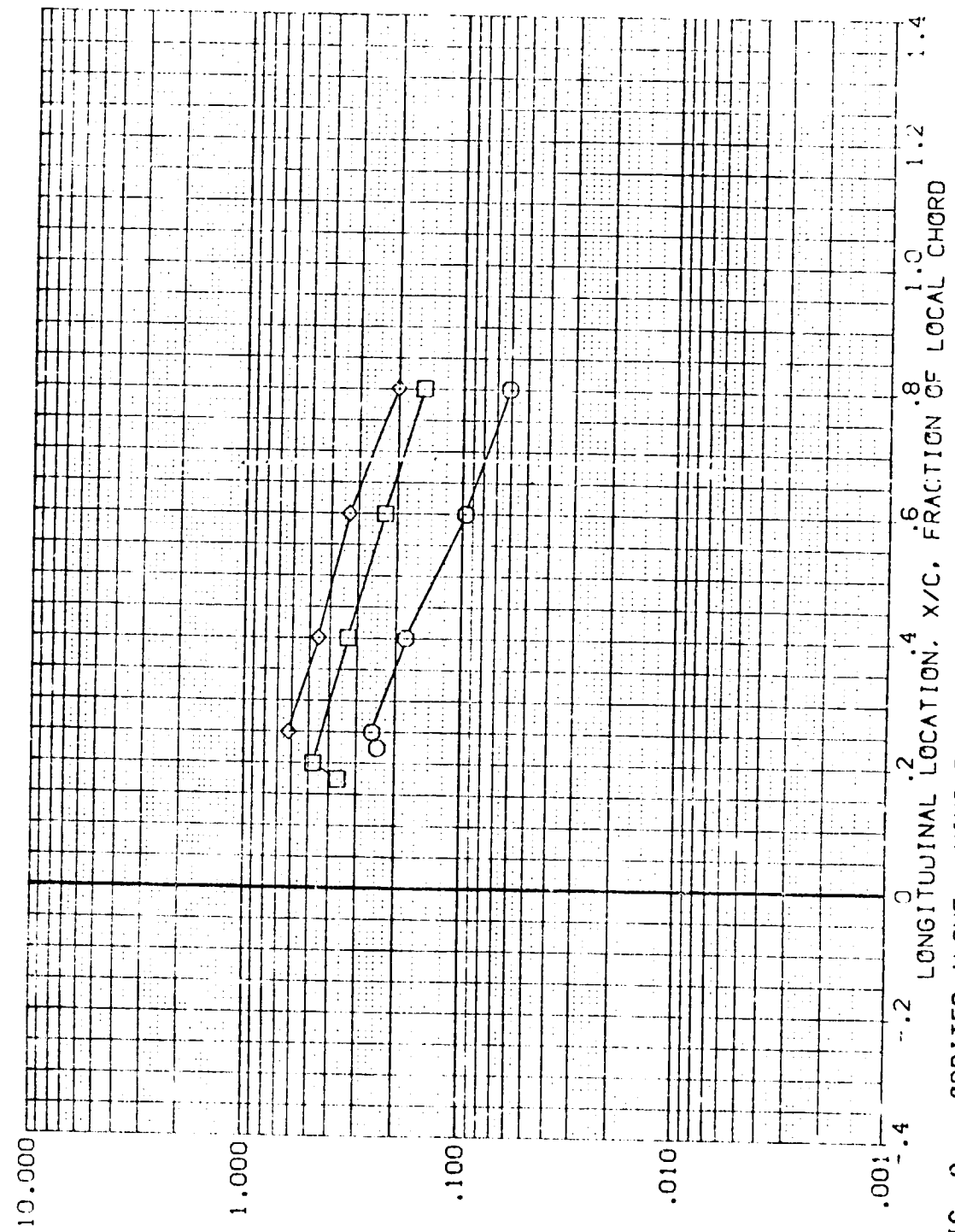


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

1118 B10C50/W87M3F4V5

ORBITER WING

(RQMWO8)

SYMBOL 2Y/B HAW/HT RN/L 4.583
 .400
 .500
 .800

PARAMETRIC VALUES
 ALPHA 15.000
 BETA 95.74
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

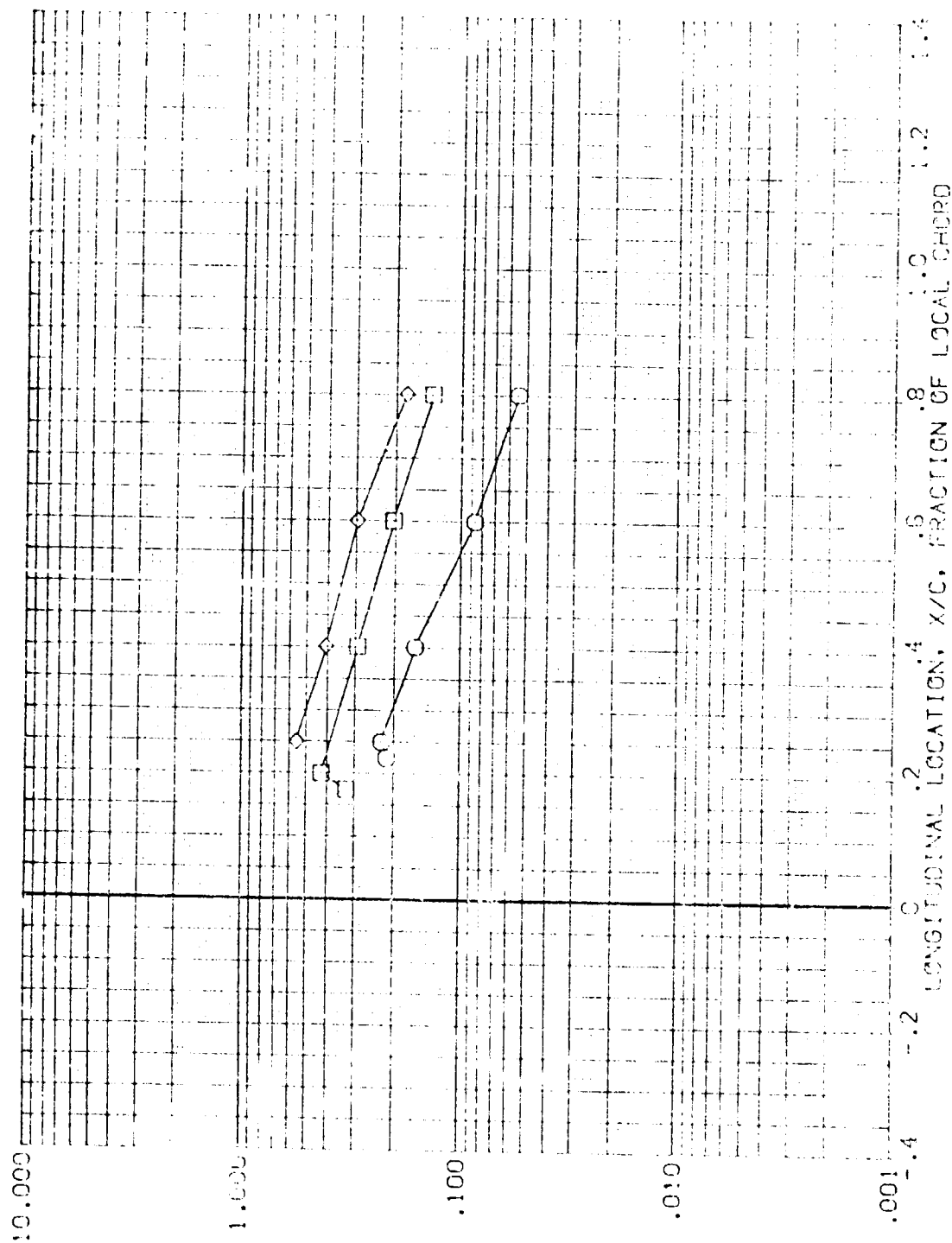


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

ORBITER WING (RQMWO8)

1H18 310C50/W8/M3F4V5

SYMBOL 2Y/9 H/W/HY RN/L
 .400 1.000 4.583
 .600
 .800

PARAMETRIC VALUES
 ALPHA BETA
 MACH .000
 5.000
 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

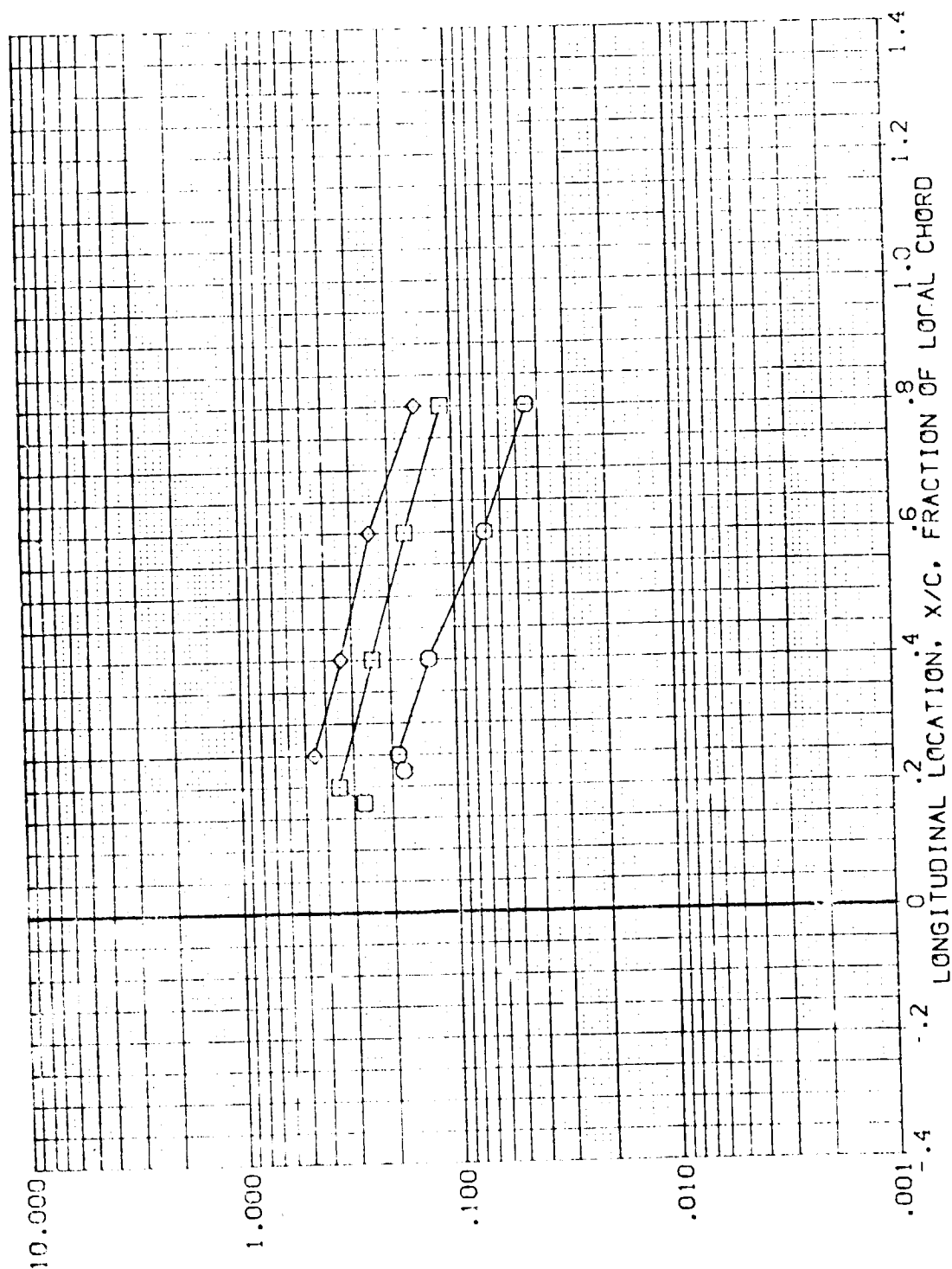


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHW02) 1418 810C507-8743F4V5
 (RCHW03) 1418 810C507-8743F4V5

ORBITER WING
 ORBITER WING
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

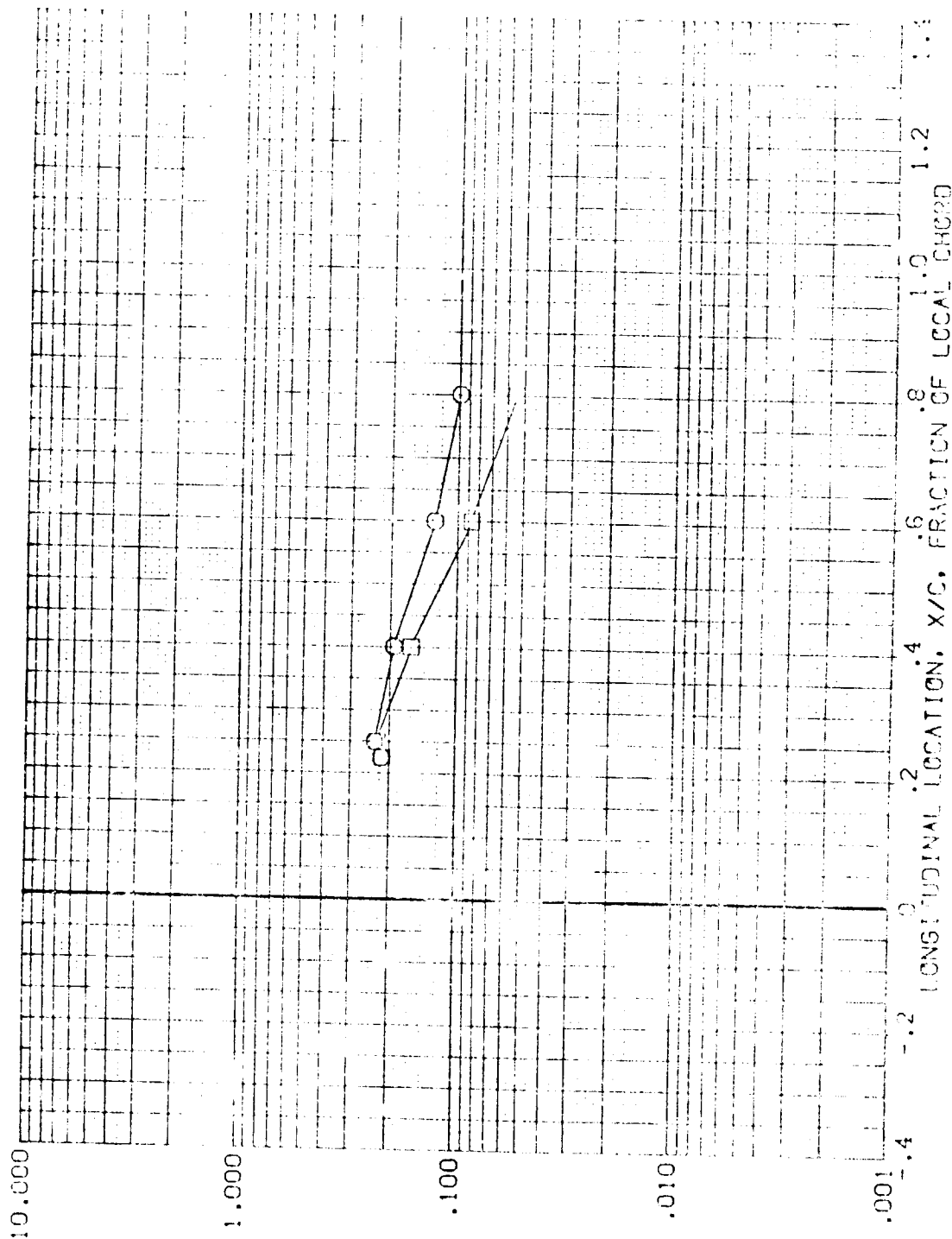


FIG 3 ORBITER ALONE - WING DATA - NO TRIPS

$RN/L = 5.3.5$ $WING/REF = .900$ $2Y/B = .400$

DATA SET SYMBOL CONFIGURATION DESCRIPTION ORBITER WING BETA ALPHA MACH
 (RQM07) IM18 B10C507M87M3F4V5 ORBITER WING .000 .000 6.000
 (RQM08) IM18 B10C507M87M3F4V5 ORBITER WING .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

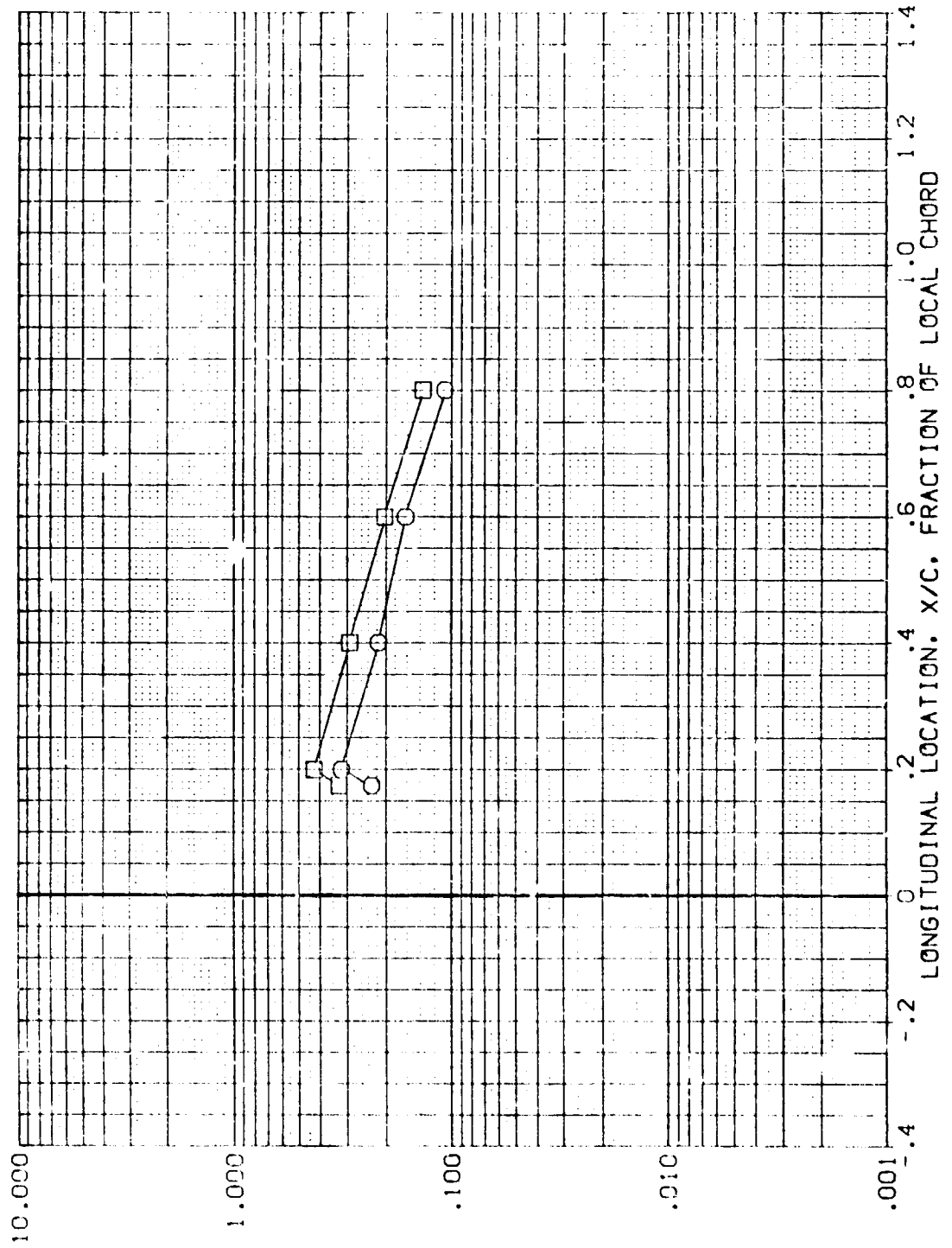


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

RN/L = 5.315 HAW/HT = .850 2Y/B = .600

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (P2M-07) B IM18 81005074874354V5
 (RQ-03) B IM18 81005074874354V5

ORBITER WING
 ORBITER WING

BETA ALPHA MACH
 .000 .000 6.000
 .000 .5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

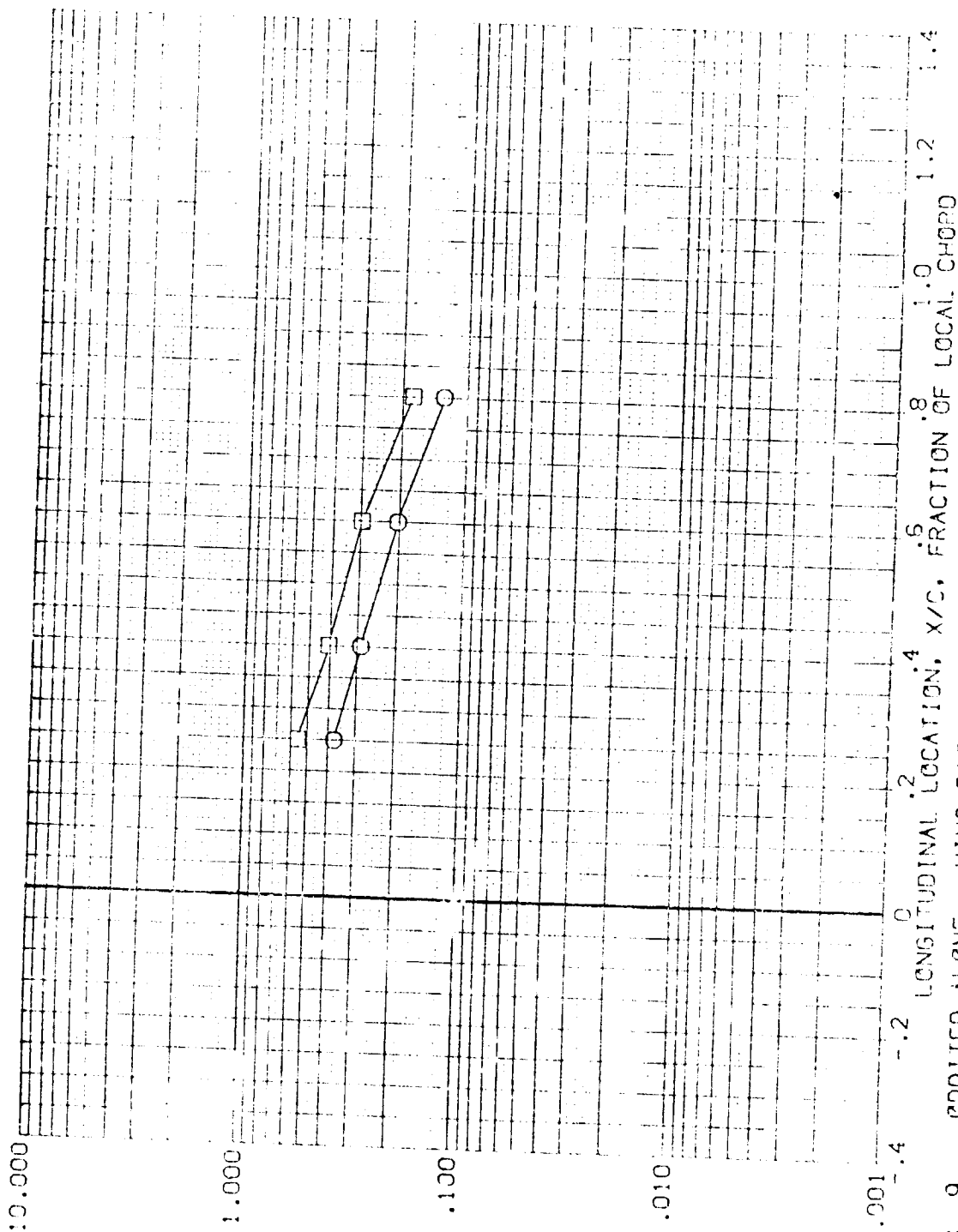


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

$R^2/L = 5.315$ $HAW/HT = .850$ $2Y/B = .900$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R04V07) B100507W87M3F4V5
 (R04V08) B100507W87M3F4V5

ORBITER WING BETA ALPHA MACH
 CRBITER WING .000 .000 5.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

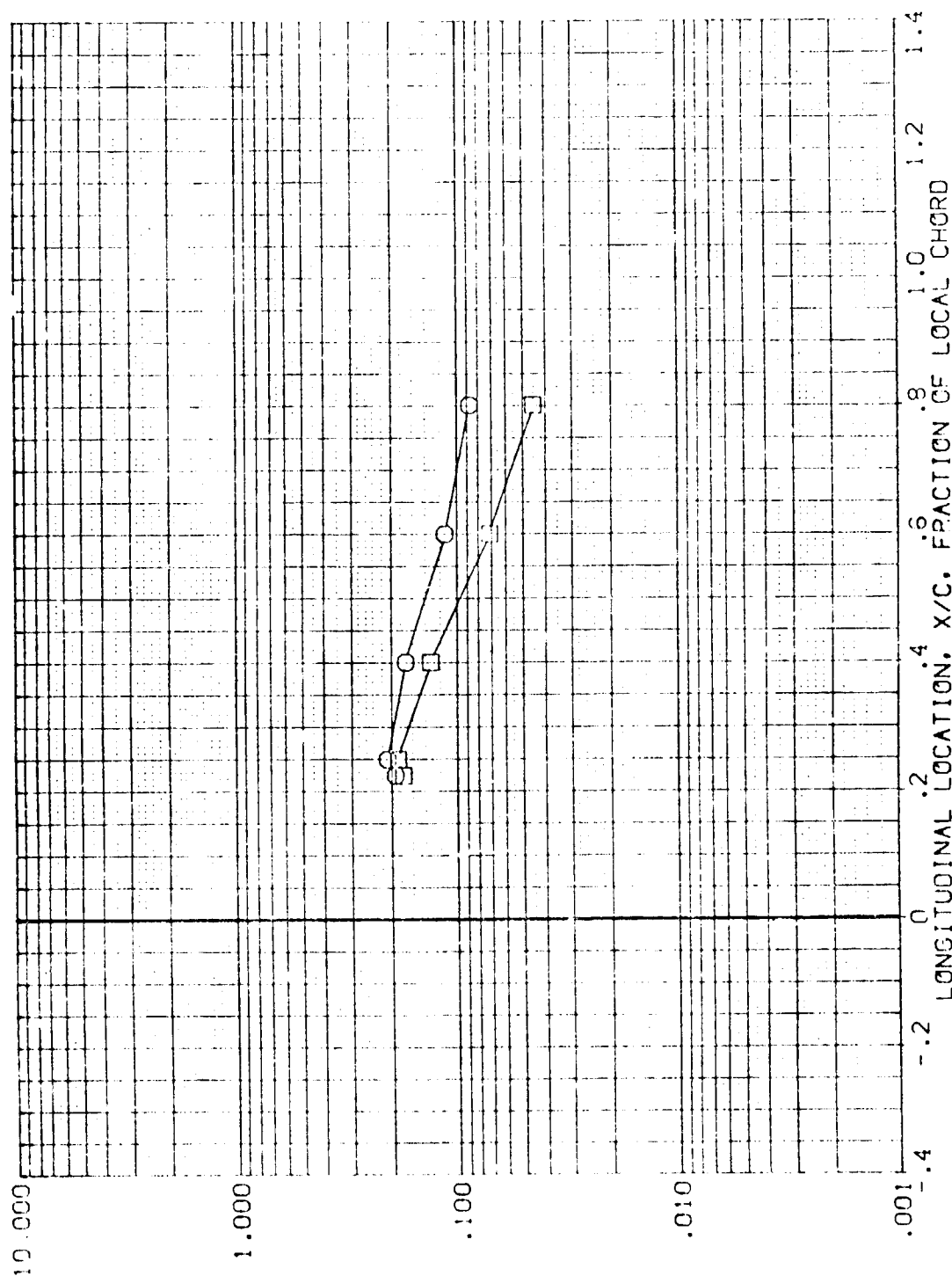


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

RN/L = 5.315 HAW/HT = 1.000 2Y/B = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (P2=08) B H18 810C507W87M3F4V
 (P2=08) B H18 810C507W87M3F4V5

ORBITER WING ORBITER WING
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

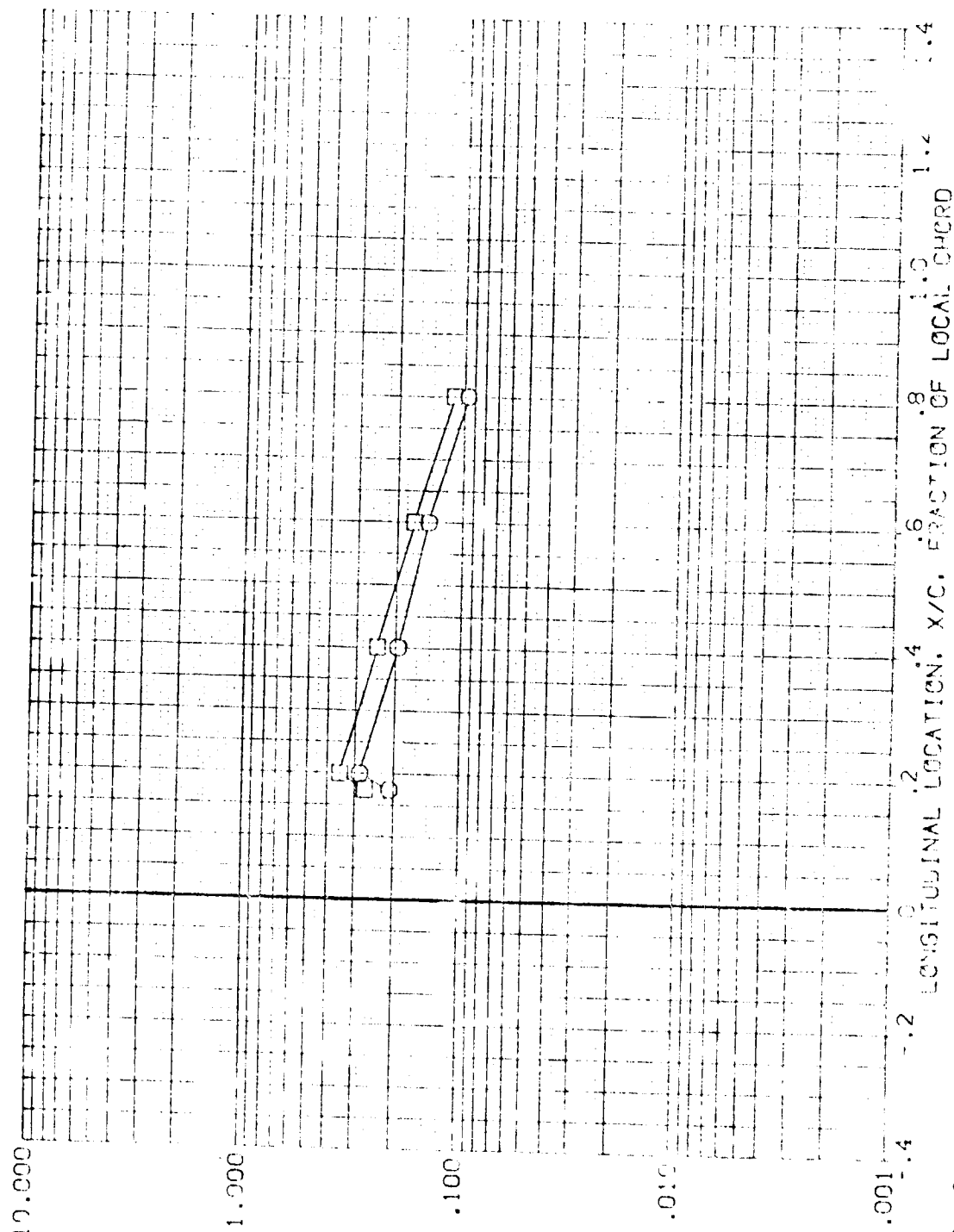


FIG 9 ORBITER ALONE - WING DATA - NO IRIPS

WING 810C507W87M3F4V 1.000 2Y/B = .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (ROM/07) B 3:00507W87M3F4V5
 (ROM/08) 3:00507W87M3F4V5

ORBITER WING
 CARRIER WING

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

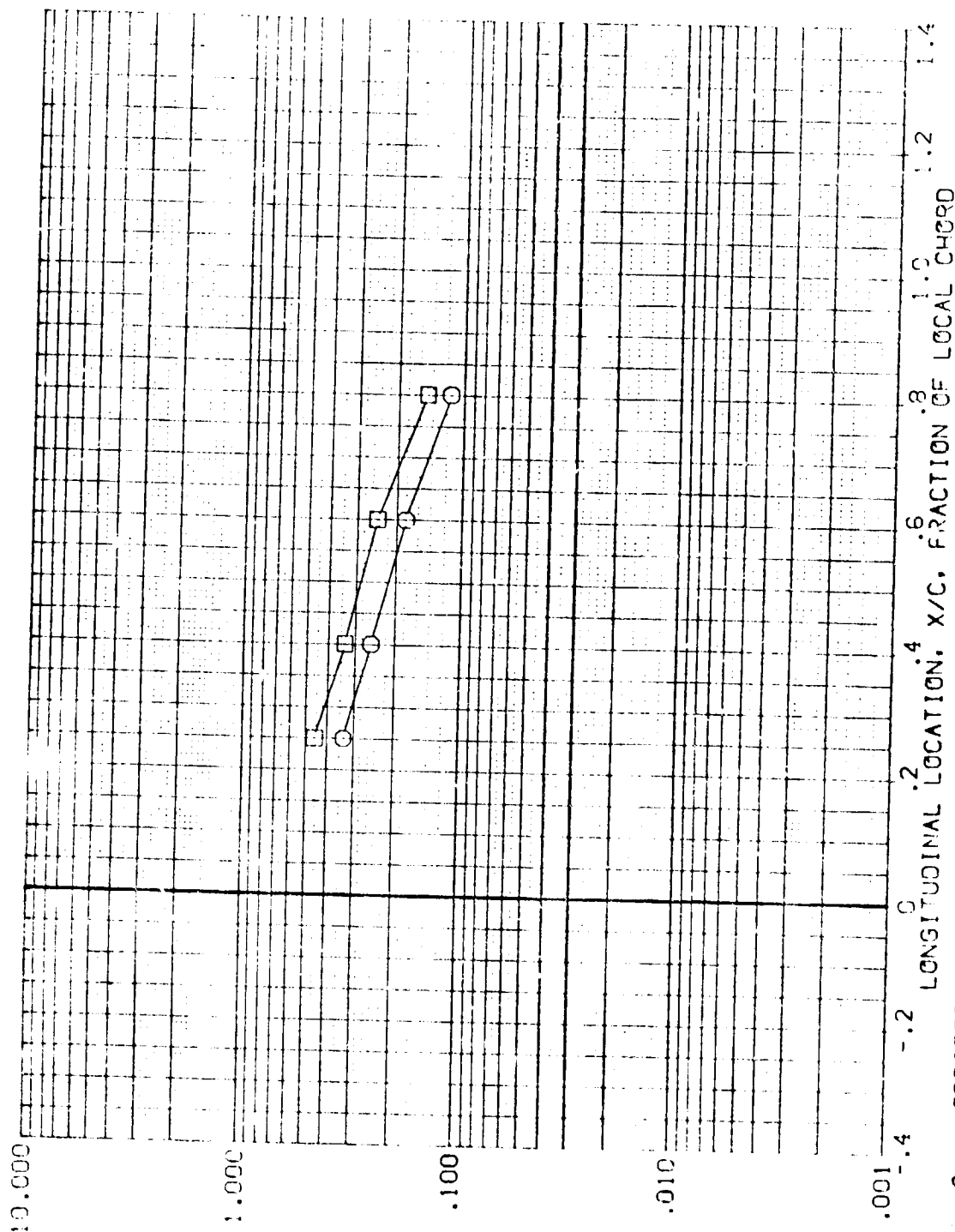


FIG 9 ORBITER ALONE - WING DATA - NO TRIPS

RN/L = 5.315 HAW/HT = 1.000 2Y/B = .800

FIG 10 CRBITER WING (RQMW09)

51000 2000 1.400 1.850 4.778
 1.000 1.000 1.000 1.000

PARAMETRIC VALUES
 ALPHA 1.000
 MACH 1.000
 BETA 1.000
 X-H 1.000

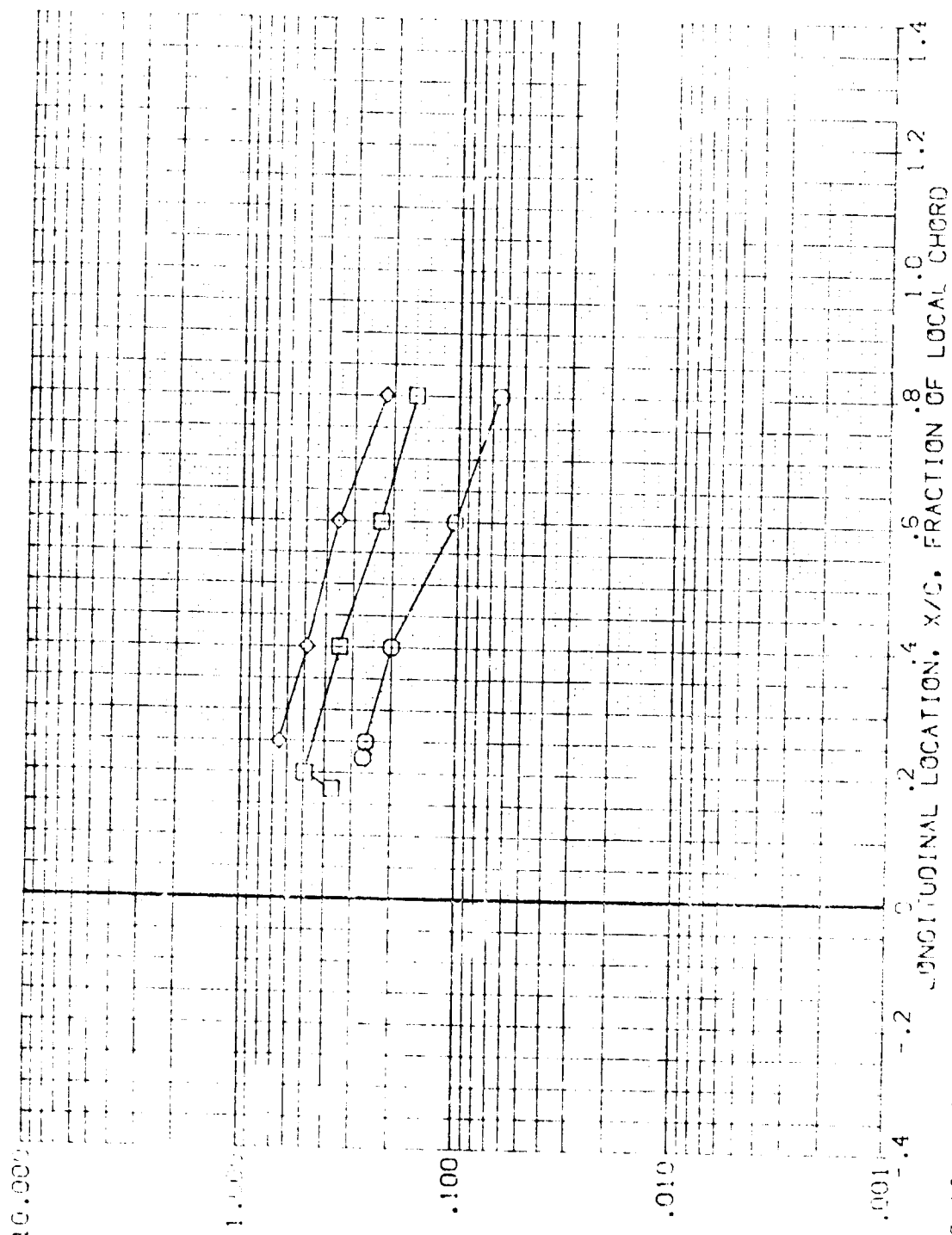


FIG 10 CRBITER ALONE - WING DATA - SMALL TRIPS

1418 310C50/W87M3F4V5 X25 GRBITER WING (RQMWO9)

SY-90L

2015
2014
2013
2012
2011

JH/MY.
BCE.

RM/L
4.2.18

ALPHA	-5.000	BETA
MACH	6.000	X-HT

500-500

BBYA

(.) .
(.) (.)
(.) (.)
 . .

500-500

BBYA

500-500

BBYA

(.) .
(.) (.)
(.) (.)
 . .

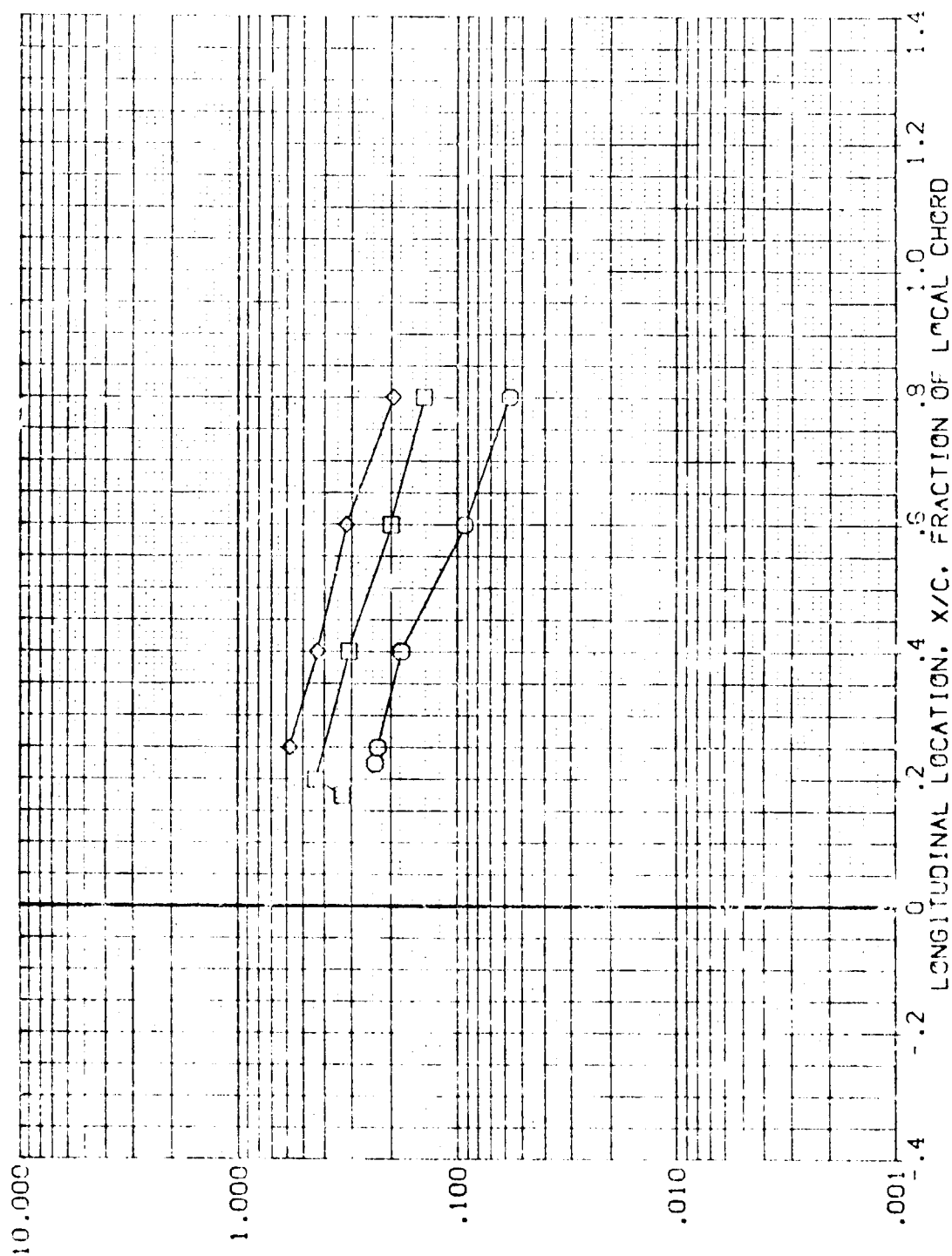
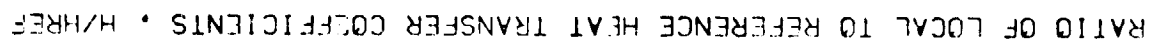


FIG 10 CRBITTER ALONE - WING DATA - SMALL TRIPS

!H18 B10C507W87M3F4V5 X26 ORBITER WING (RQMWO9)

SYMBOL 2Y/B
 .400
 .600
 .800

HAW/HT RN/L
 1.000 4.778

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA X-H? .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

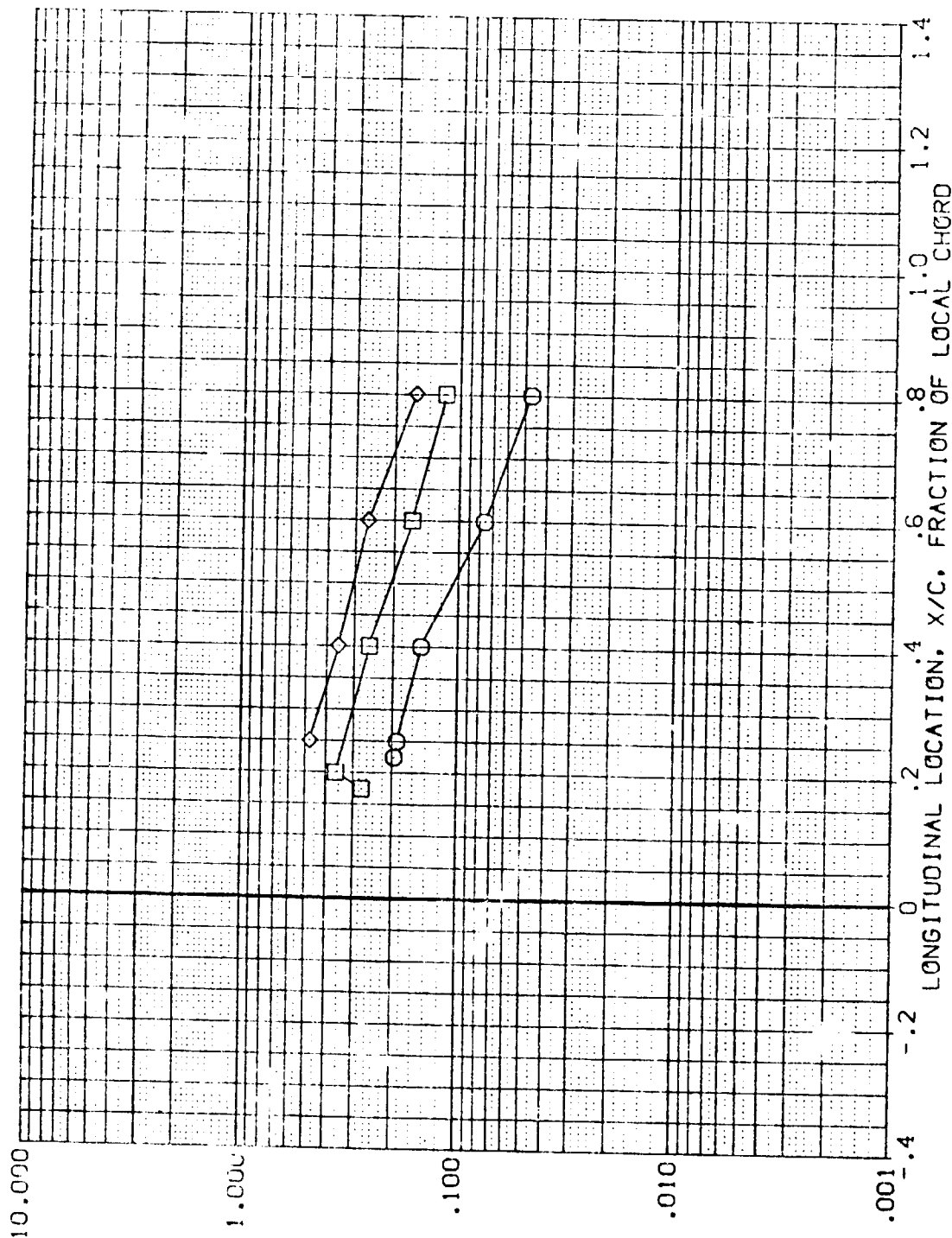


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

1418 B10C5D7W87M3F4V5 X26 ORBITER WING (RQM10)

SYMBOL	2Y/B	HAW/HT	RN/L	PARAMETRIC VALUES		
				ALPHA	BETA	X-HT
◇	.400	.850	4.844	.000	.000	.000
□	.600			6.000		
○	.800					.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

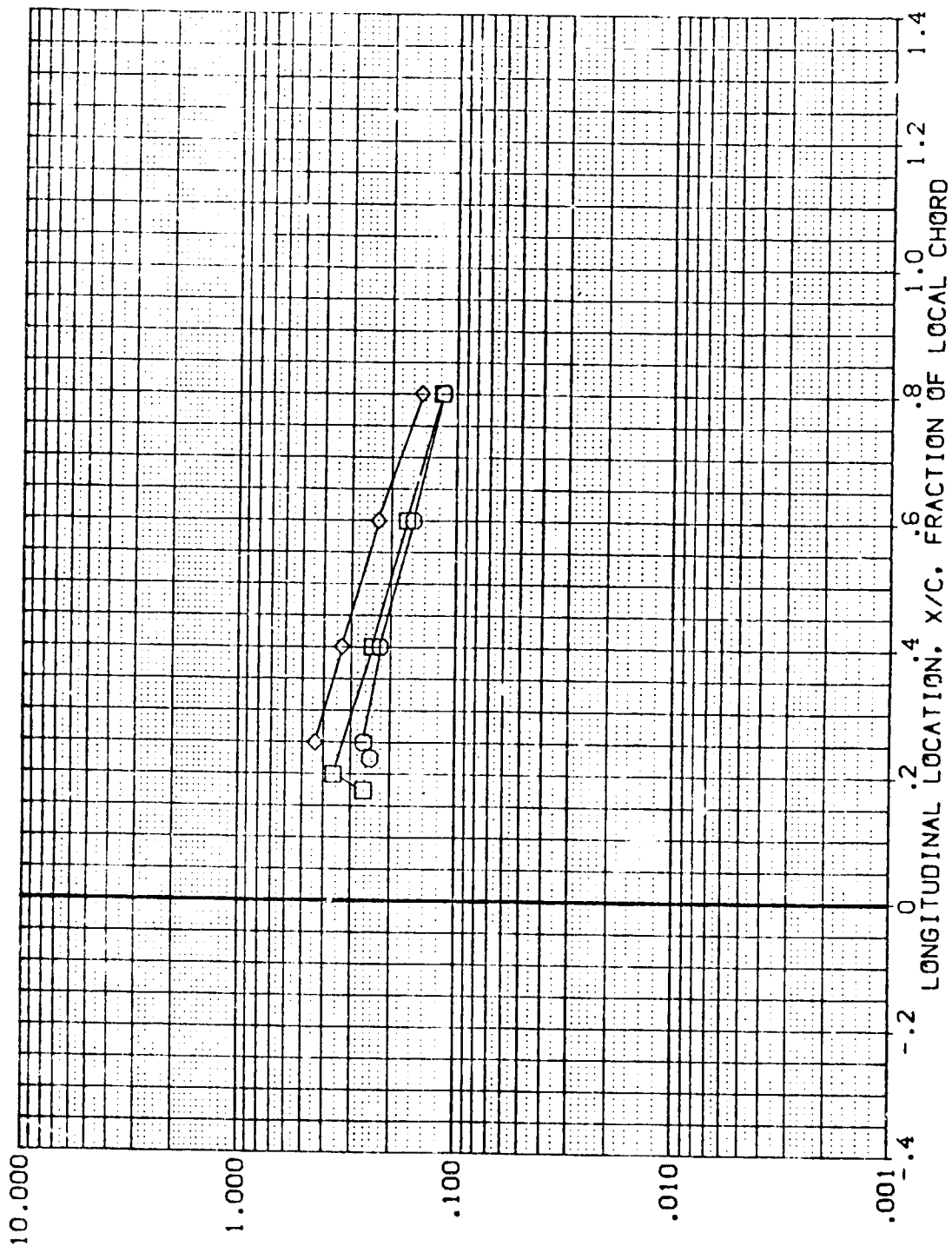


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

1H18 B10C5D7W87M3F4V5 X26 ORBITER WING (RQM10)

PARAMETRIC VALUES
 ALPHA .000 BETA .000
 MACH 6.000 X-HT .031

SYMBOL 2Y/B HAW/I:T RN/L
 .400 .900 4.844
 .600
 .800

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

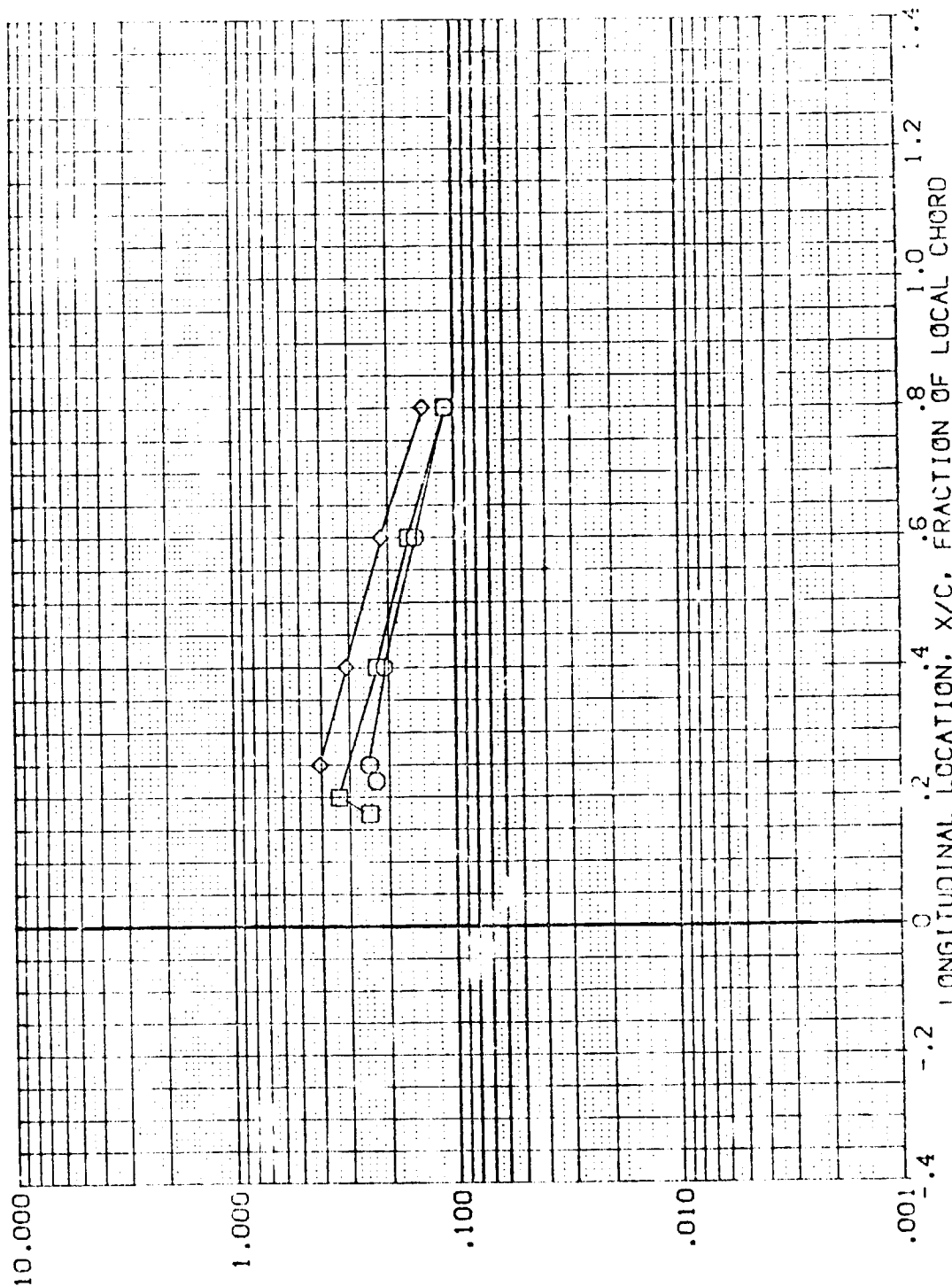


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

IH18 810C507W87M3F4V5 X26 ORBITER WING (RQMW10)

PARAMETRIC VALUES
 .000 BETA
 .031 X-HT

MAW/HT 1.000
 RN/L 4.844

SYMBOL 2Y/B
 .400
 .500
 .600

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

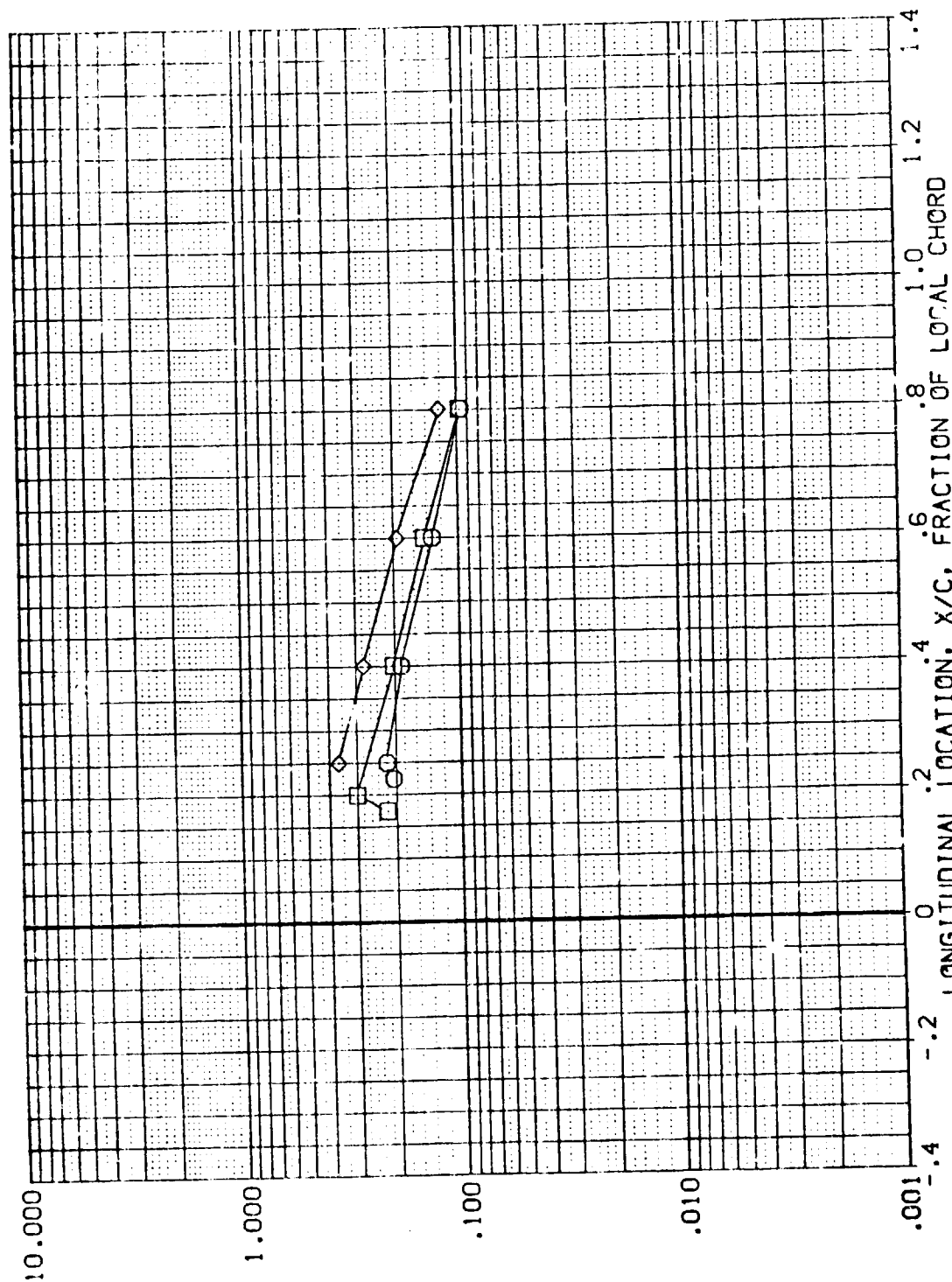


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(R0409)	IM:B 810C507487M3F4V3 X25	.000	-5.000	6.000	.031
(R0410)	IM:B 810C507487M3F4V5 X26	.000	.000	6.000	.031
	ORBITER WING				
	ORBITER WING				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

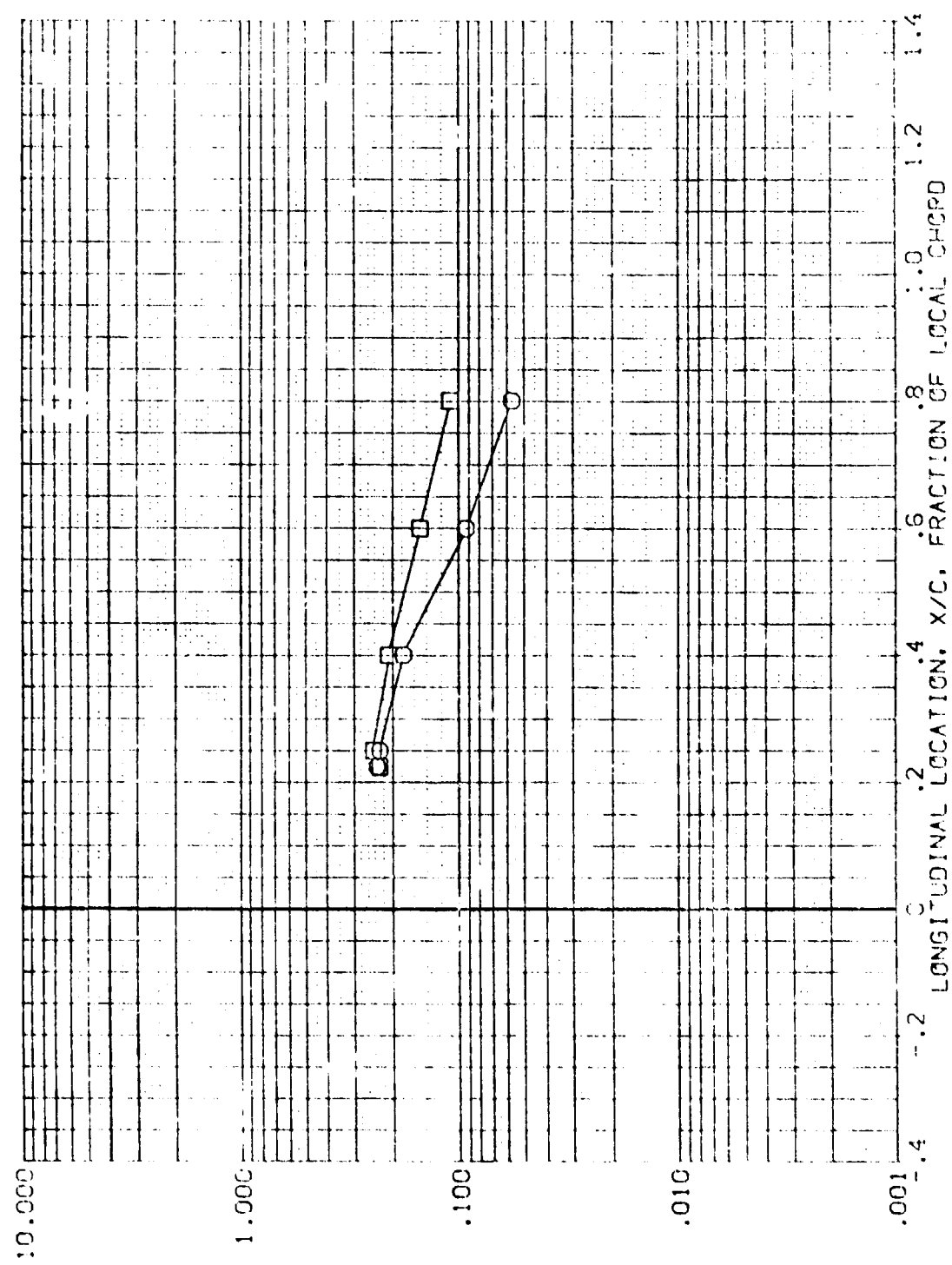


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

Re/L = 4.778 HAW/HT = .850 2Y/B = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION ORBITER WING BETA ALPHA MACH X-HT

(ROMW09) [H18 810C507W87M3F4V5 X26
(ROMW10) [H18 810C507W87M3F4V5 X26

ORBITER WING
ORBITER WING

BETA ALPHA MACH X-HT
.000 -.000 6.000 .031
.000 .000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

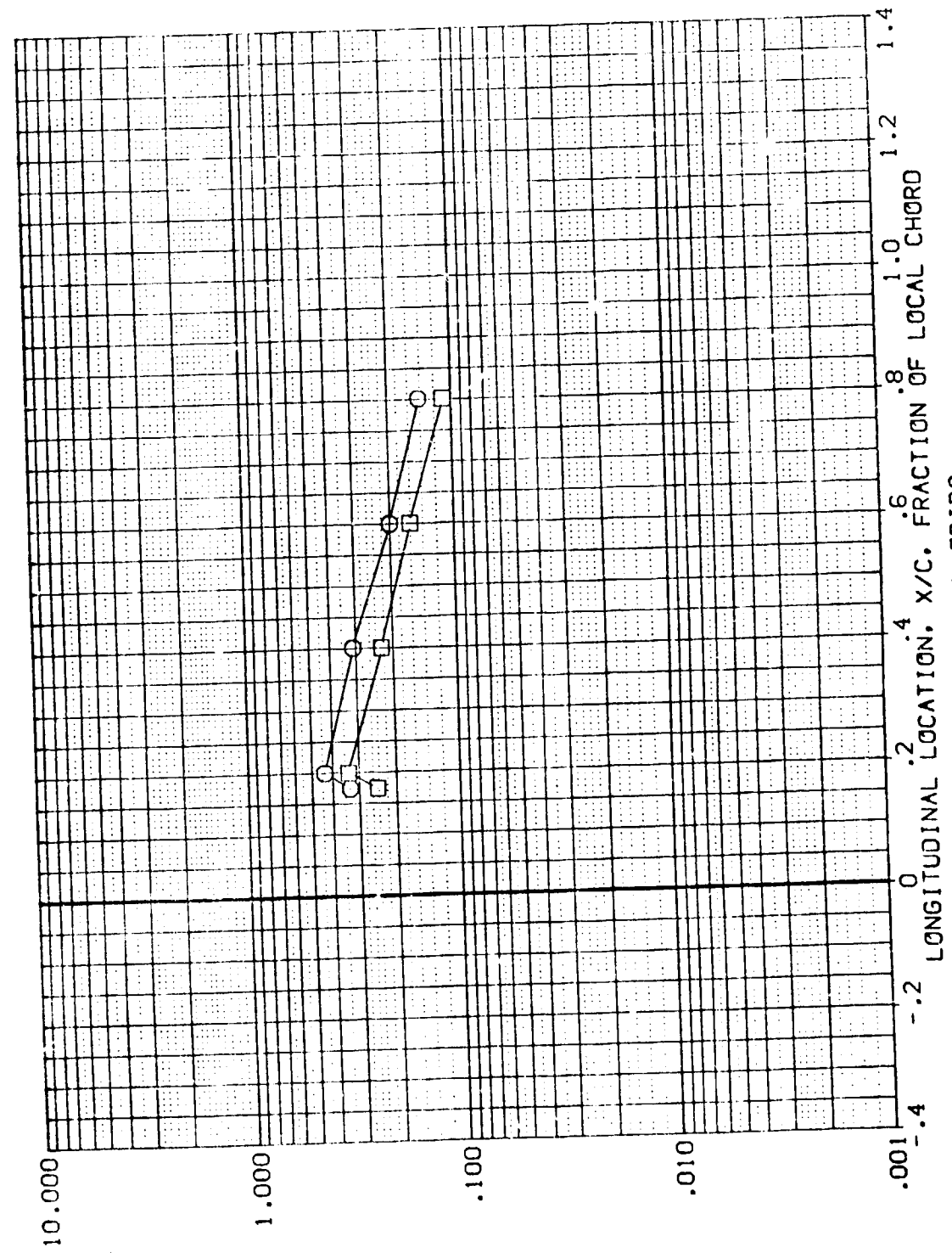


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = .850 2Y/B = .600

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(P3M429)	[M18 B10C5D7W87M3F4V5 X26	.000	-5.000	6.000	.031
(P3M410)	[M18 B10C5D7W87M3F4V5 X25	.000	.000	5.000	.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

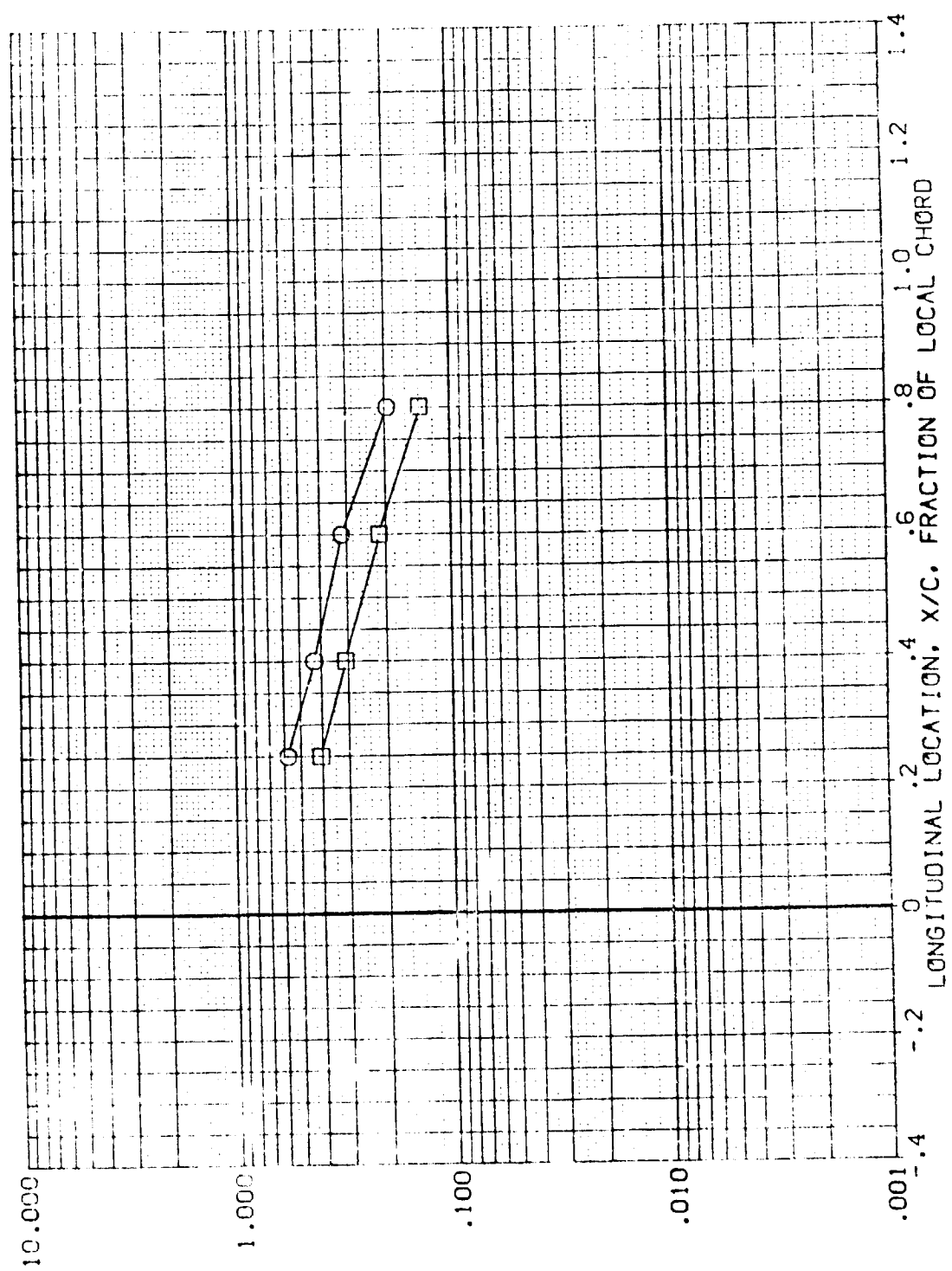


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

$Re/L = 4.778$ $h_{AW}/h_T = .850$ $2Y/B = .800$

DATA SET 5, MODEL 8
 (RQHW09) 810C507W87M374V5 X26
 (RQHW10) 810C507W87M374V5 X26

ORBITER WING
 ORBITER WING

BETA
 .000
 .000

ALPHA
 -5.000
 .000

MACH
 6.000
 6.000

X-HT
 .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

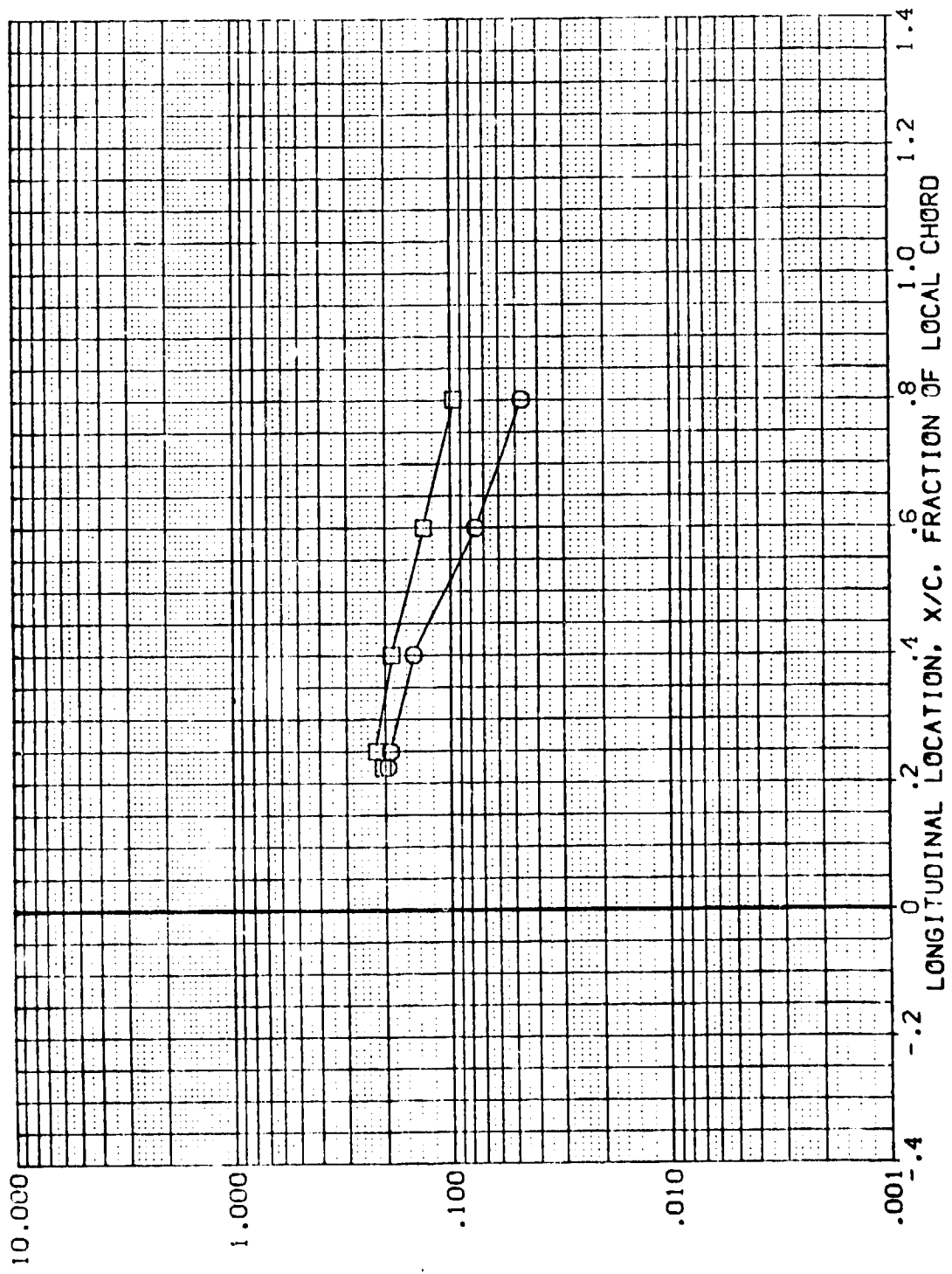


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .400

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(ROMV09)	[H18 B10C50748743F4V5 X26	.000	-5.000	6.000	.031
(RCM410)	[H18 B10C50748743F4V5 X26	.000	.000	6.000	.031
	ORBITER WING				
	ORBITER WING				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

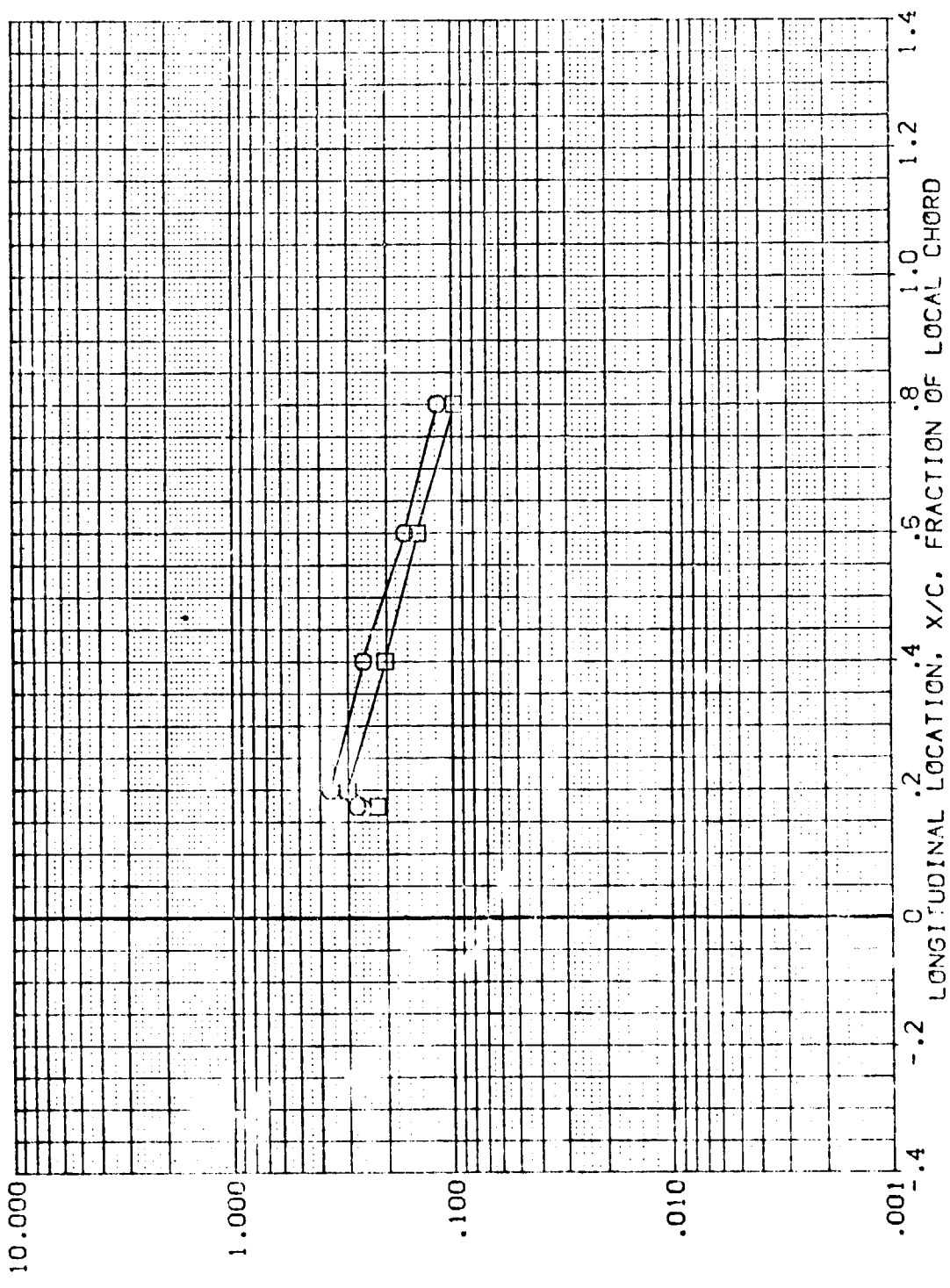


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RPMV09) IN18 B10C507W87M3F4V5 X26
 (RPMV10) IN18 B10C507W87M3F4V5 X26

ORBITER WING
 ORBITER WING

BETA .000
 .000

ALPHA -5.000
 .000

MACH 6.000
 6.000

X-HT .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

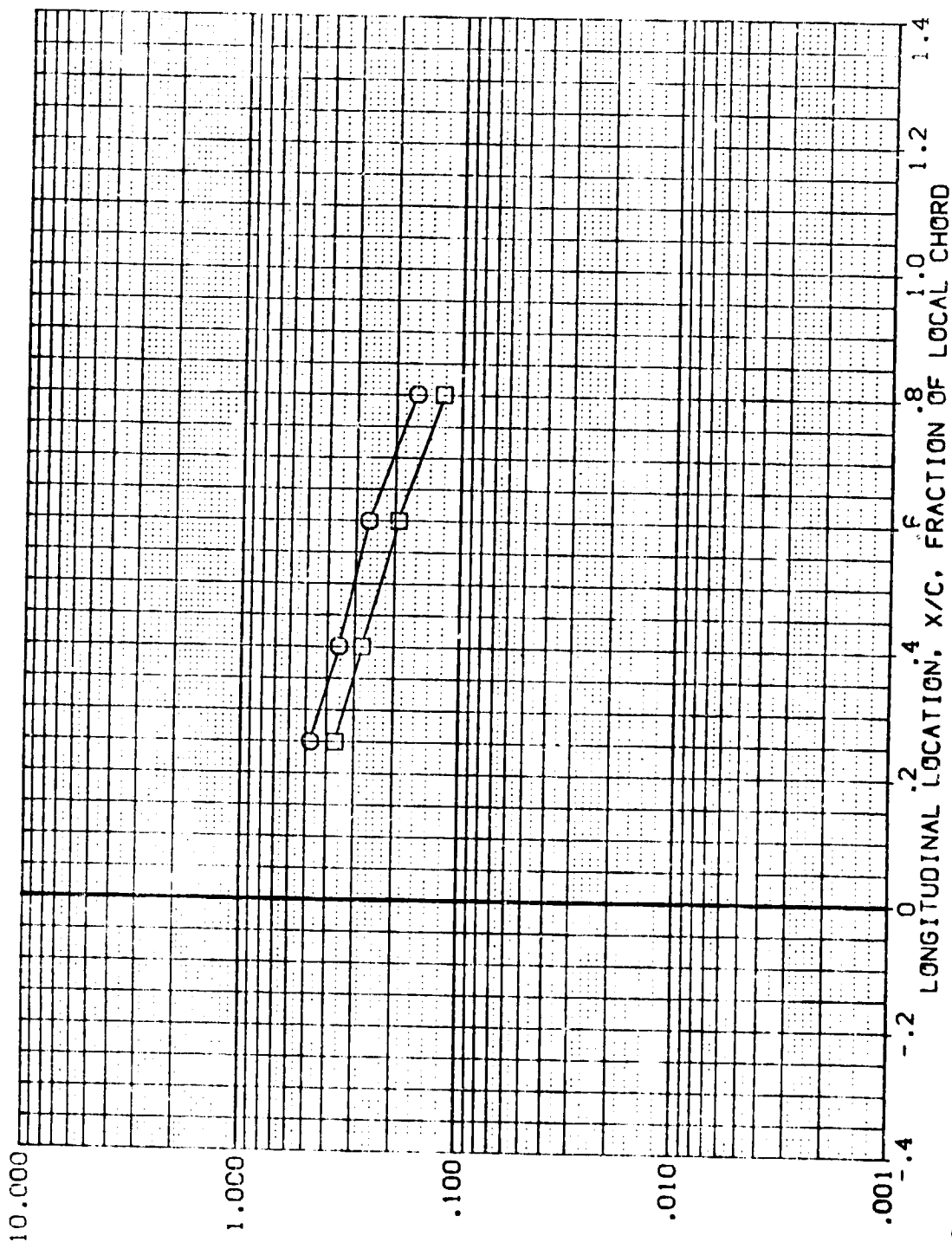


FIG 10 ORBITER ALONE - WING DATA - SMALL TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .800

1H18 B10C5D7W87M3F4V5 T8 ORBITER WING (RQMWO1)

SYMBOL

2Y/B
 .400
 .600
 .800

HAN/HT
 .850

RN/L
 4.778

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA .000
 DELTA .075

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

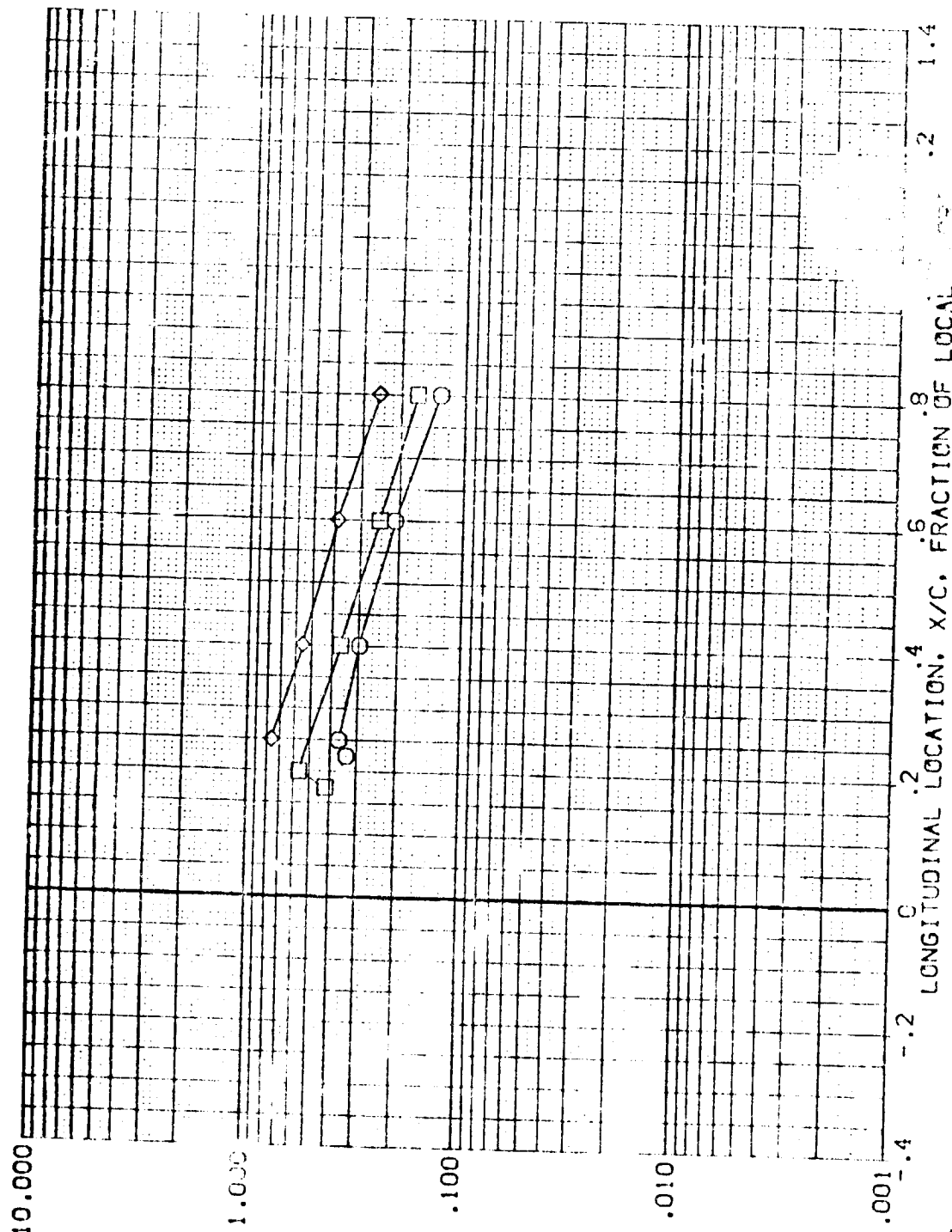


FIG 11 CRBITER + ET - WING DATA - NO TRIPS

IH18 810C50/W87M3F4V5 T8 ORBITER WING (RQM'V01)

SYMBOL

2Y/8

HAW/HI

RV/L

4.778

.400

.600

.800

PARAMETRIC VALUES

.000

6.000

BETA

DELTAH

.000

.175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

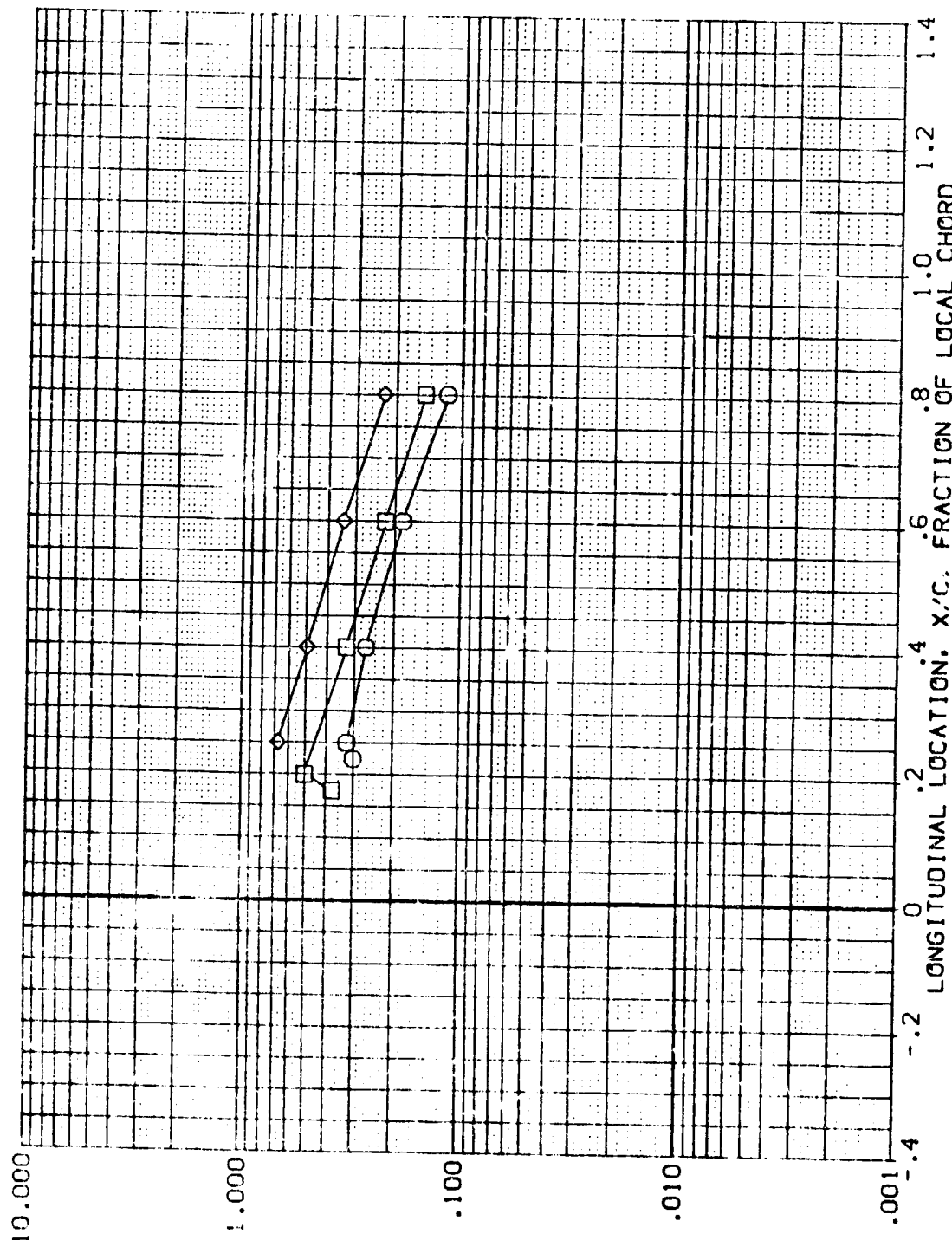


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 T8

ORBITER WING

(RQMVC1)

SYMBOL 2Y/B HAW/HT RN/L 4.778
 .400
 .600
 .800

PARAMETRIC VALUES
 ALPHA .000
 BETA .000
 MACH 6.000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

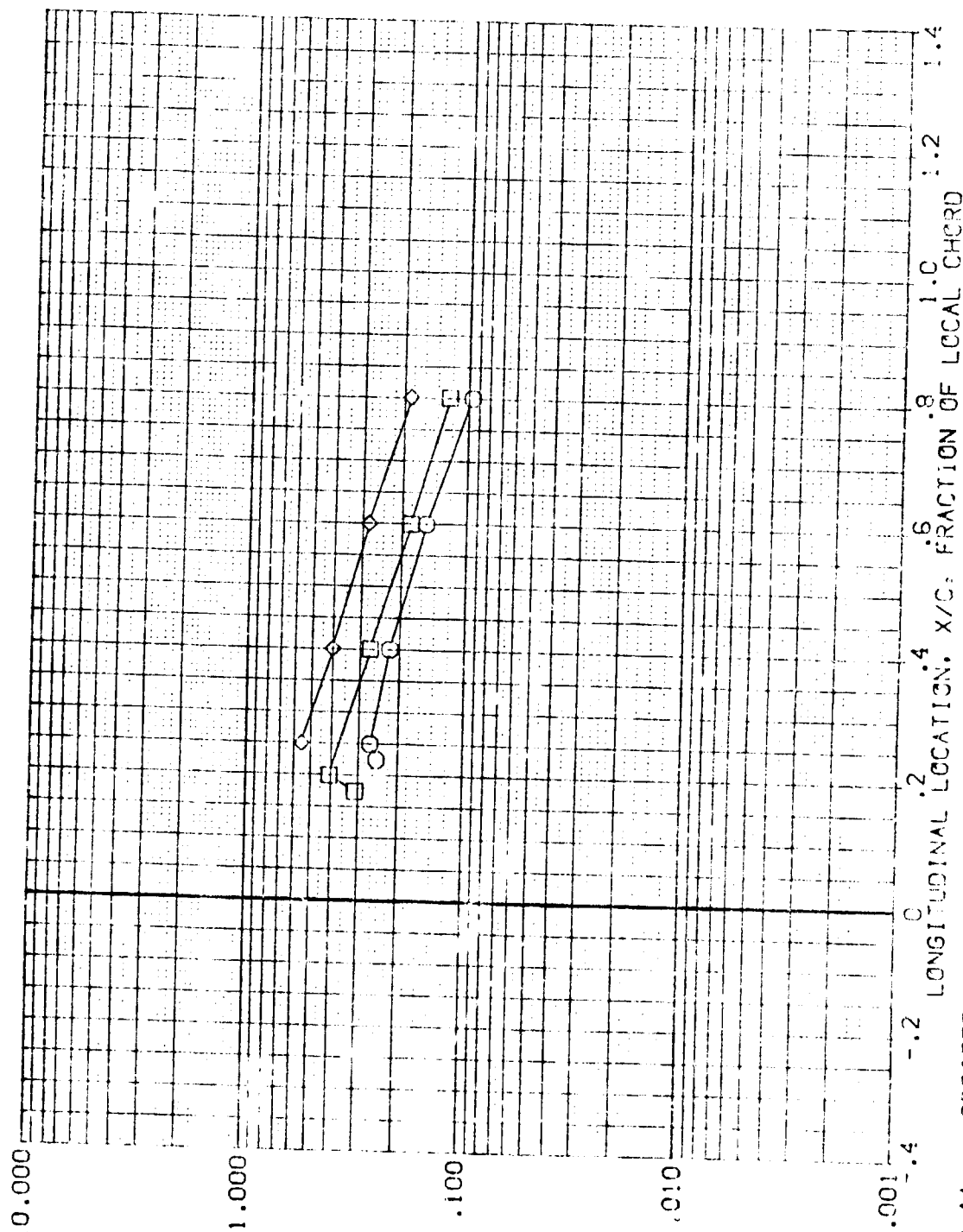


FIG 11 ORBITER + ET - WING DATA - NO RIPS

1H18 310C507W87M3F4V5 T8 ORBITER WING (RQMWO4)

SYMBOL	L/T/B	HAW/HT	RN/L	PARAMETRIC VALUES		
				ALPHA	BETA	DELTA
◇	.4	.850	.923	5.000	.000	.175
□	.600			6.000		
○	.800					

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

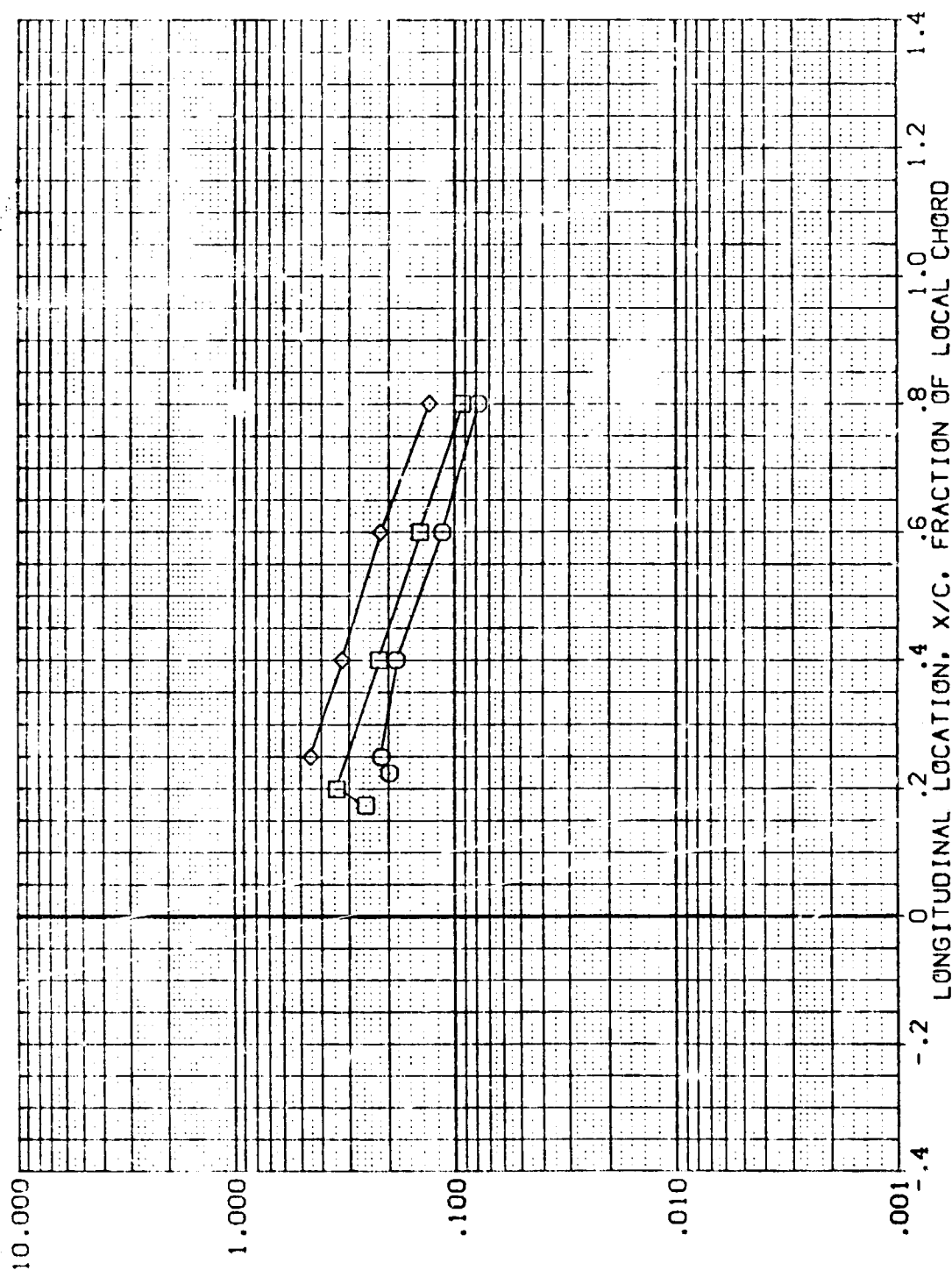


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

IH18 B10C507W87M3F4V5 T8 ORBITER WING (RQMWO4)

SYMBOL 2Y/B HAW/HT RN/L 4.923
 ○ .400
 □ .600
 ◇ .800

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 5.000
 BE'A .000
 DELTAH .175

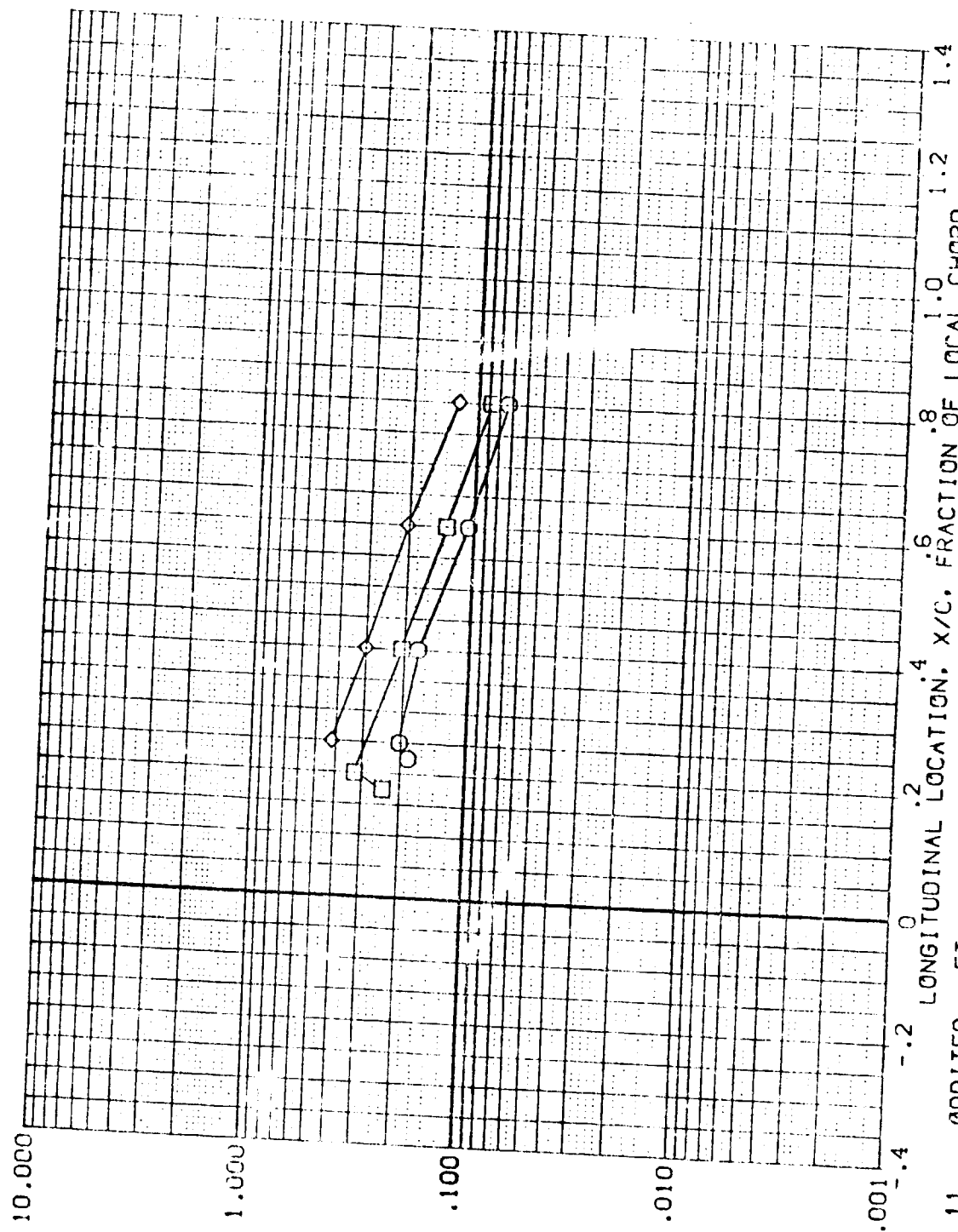


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

(RQ1W04)

I H18 B10C5D7W87M3F4V5 T8

ORBITER WING

PARAMETRIC VALUES
 -5.000 BETA
 6.000 DELTA
 .000
 .175

RY/B RN/L
 .400 1.000 4.923
 .600
 .800

SYMBOL
 ◇
 ○
 □

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

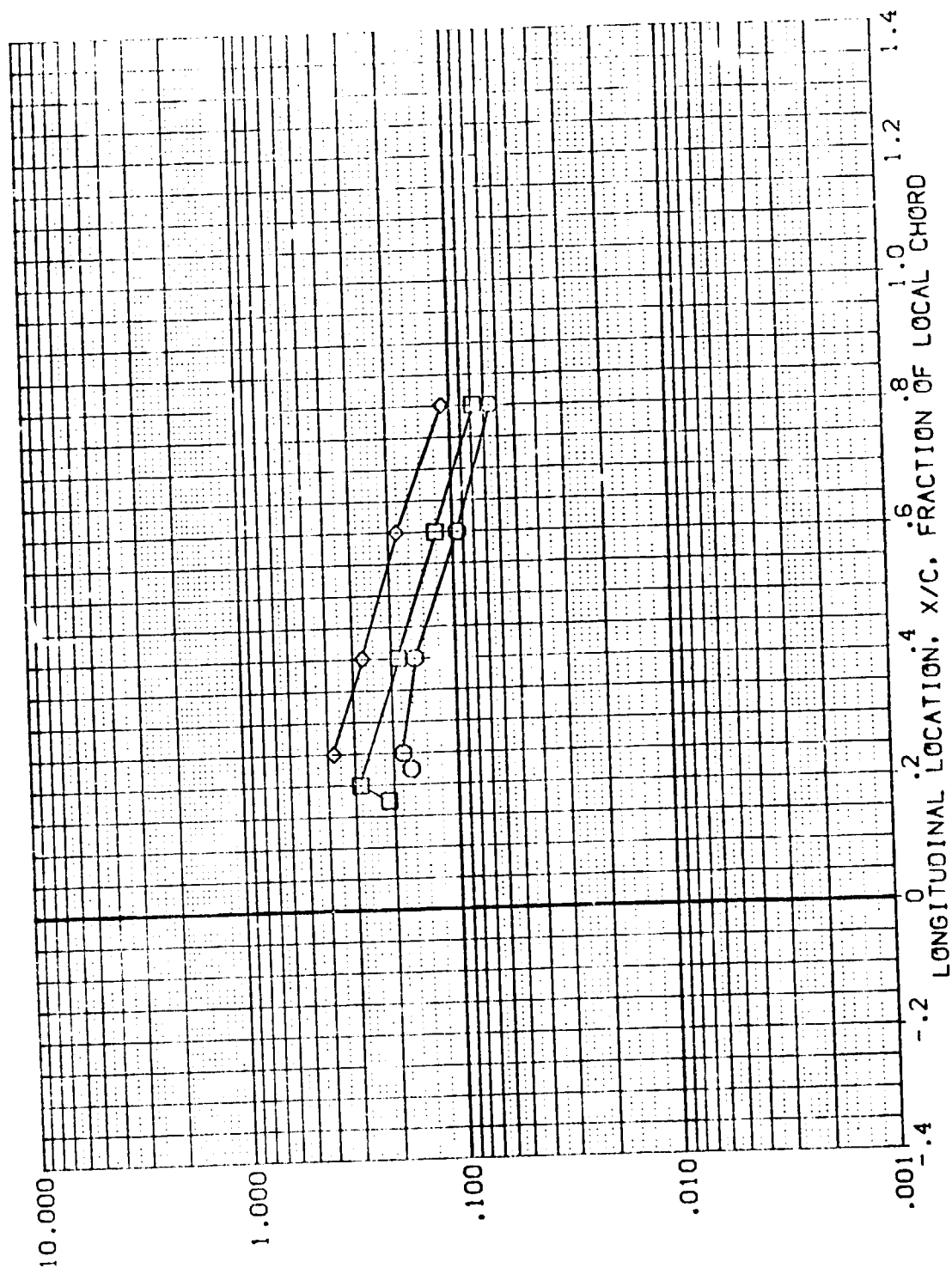


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH

(R0M01) B10C5D7487M3F4V5 T8 .000 .000 6.000

(R0M04) B10C5D7487M3F4V5 T8 .000 .000 6.000

ORBITER WING ORBITER WING

ORBITER WING ORBITER WING

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

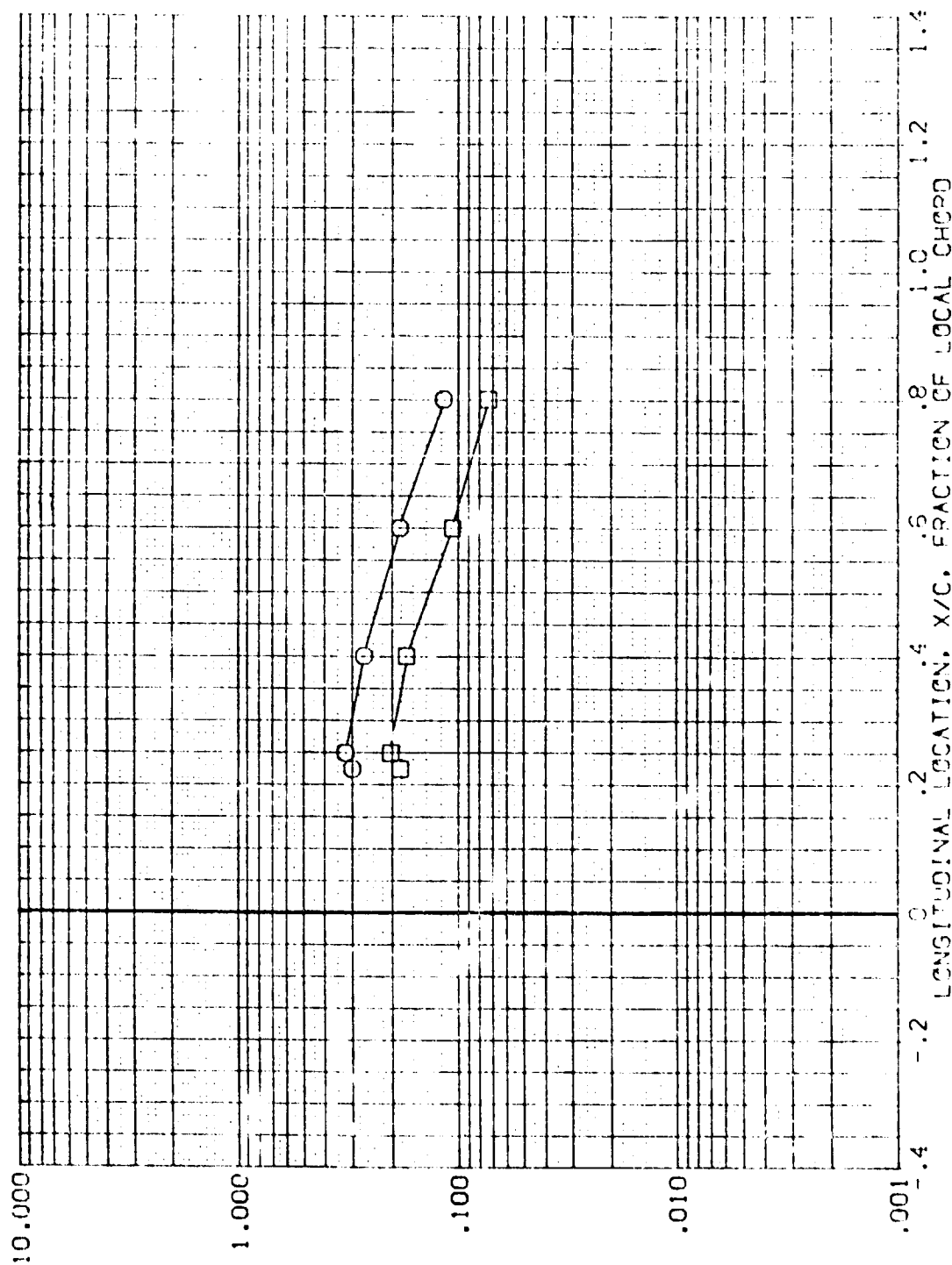


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.773 HAW/HT = .850 2Y/B = .400

DATA SET 51-80L CONFIGURATION DESCRIPTION
 (ROW#01) 1419 8100507487-3F4V5 T8 ORBITER WING
 (ROW#04) 1419 8100507487-3F4V5 T8 ORBITER WING

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

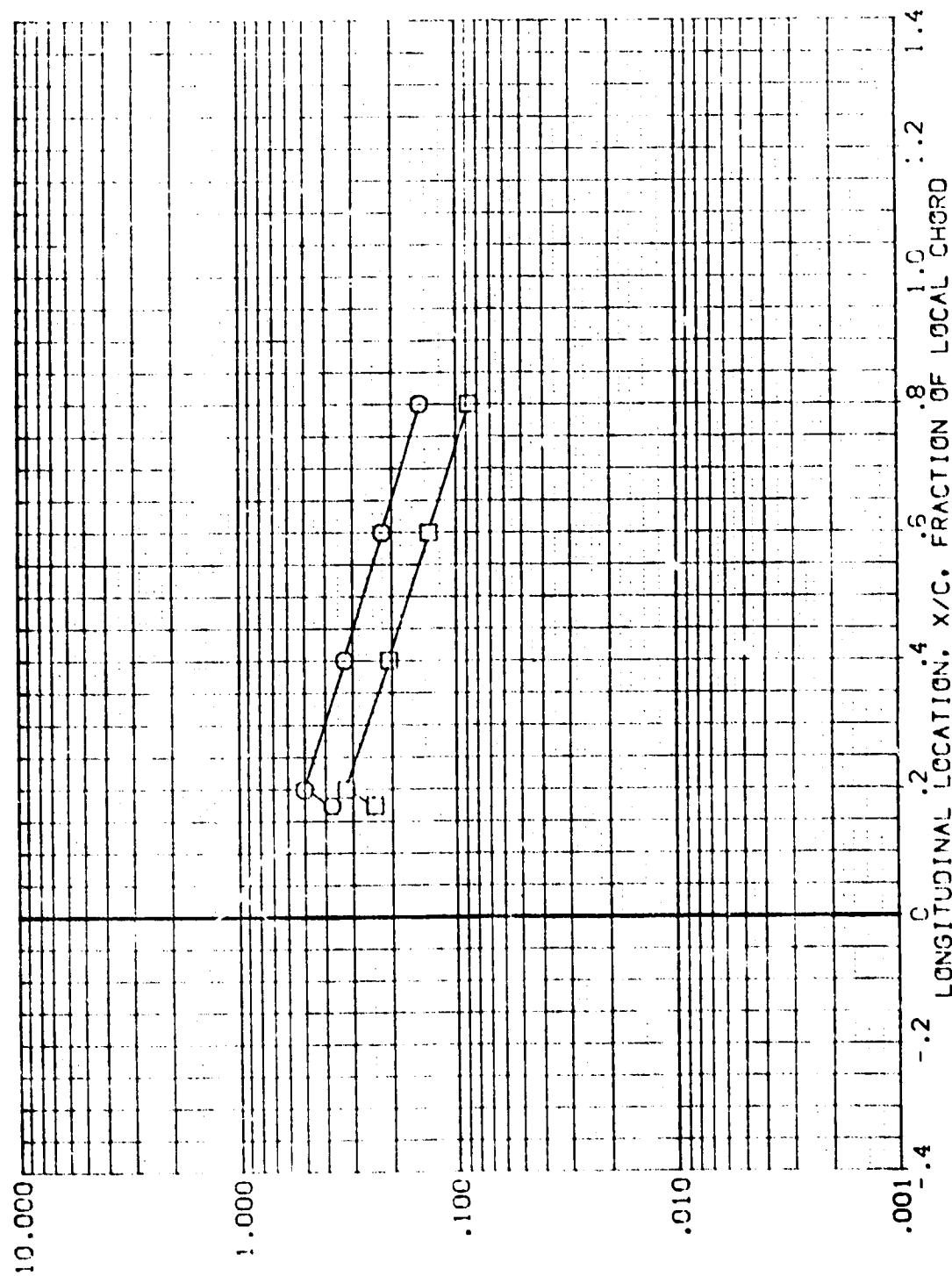


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.778 L-AW/HT = .850 2Y/B = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (P2401) 1118 9100SD7497-3F4V5 19
 (P2404) 1118 9100SD7497-3F4V5 19

BETA ALPHA MACH
 .000 .000 6.000
 .000 .000 6.000

ORBITER WING
 ORBITER WING

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

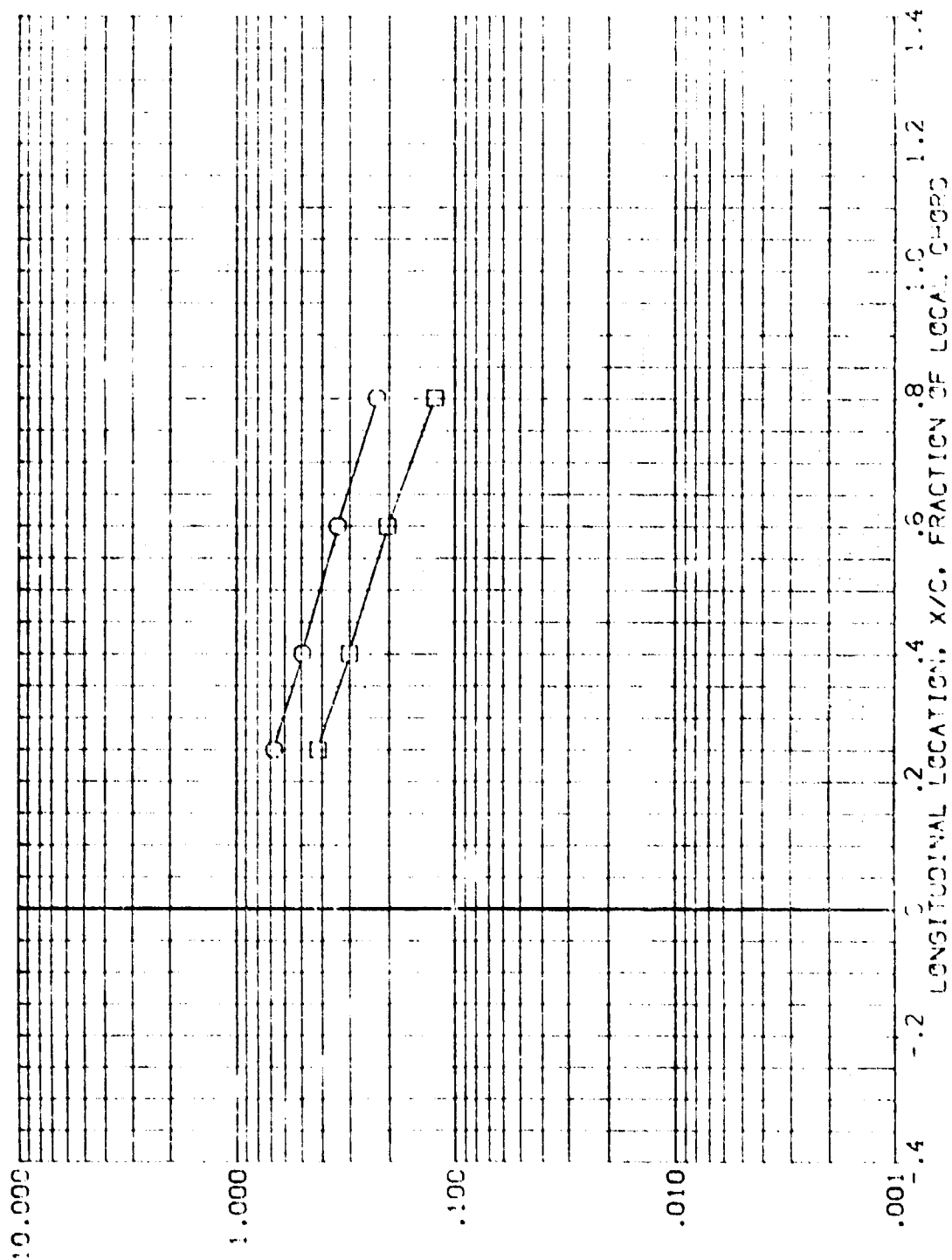


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.778 HAN/UTE = .850 2V/B = .800

DATA SET 5.1000 CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (PG#01) [] B101507492-3F4V5 18 .000 .000 5.000
 (PG#04) [] B101507492-3F4V5 18 .000 .000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

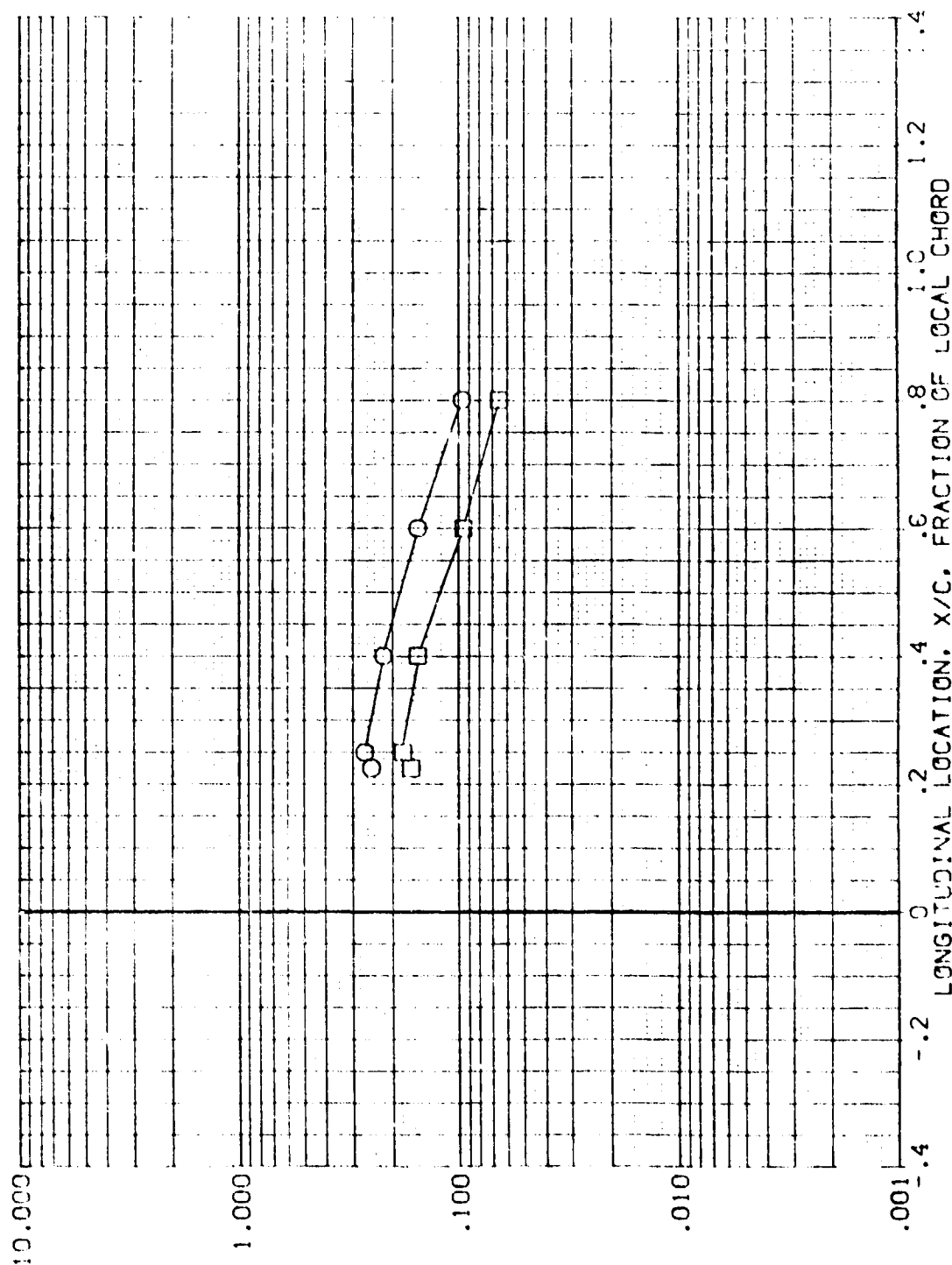


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .400

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(ROW) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

BETA ALPHA MACH
.000 .000 6.000
-5.000 6.000

ORBITER WING
ORBITER WING

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

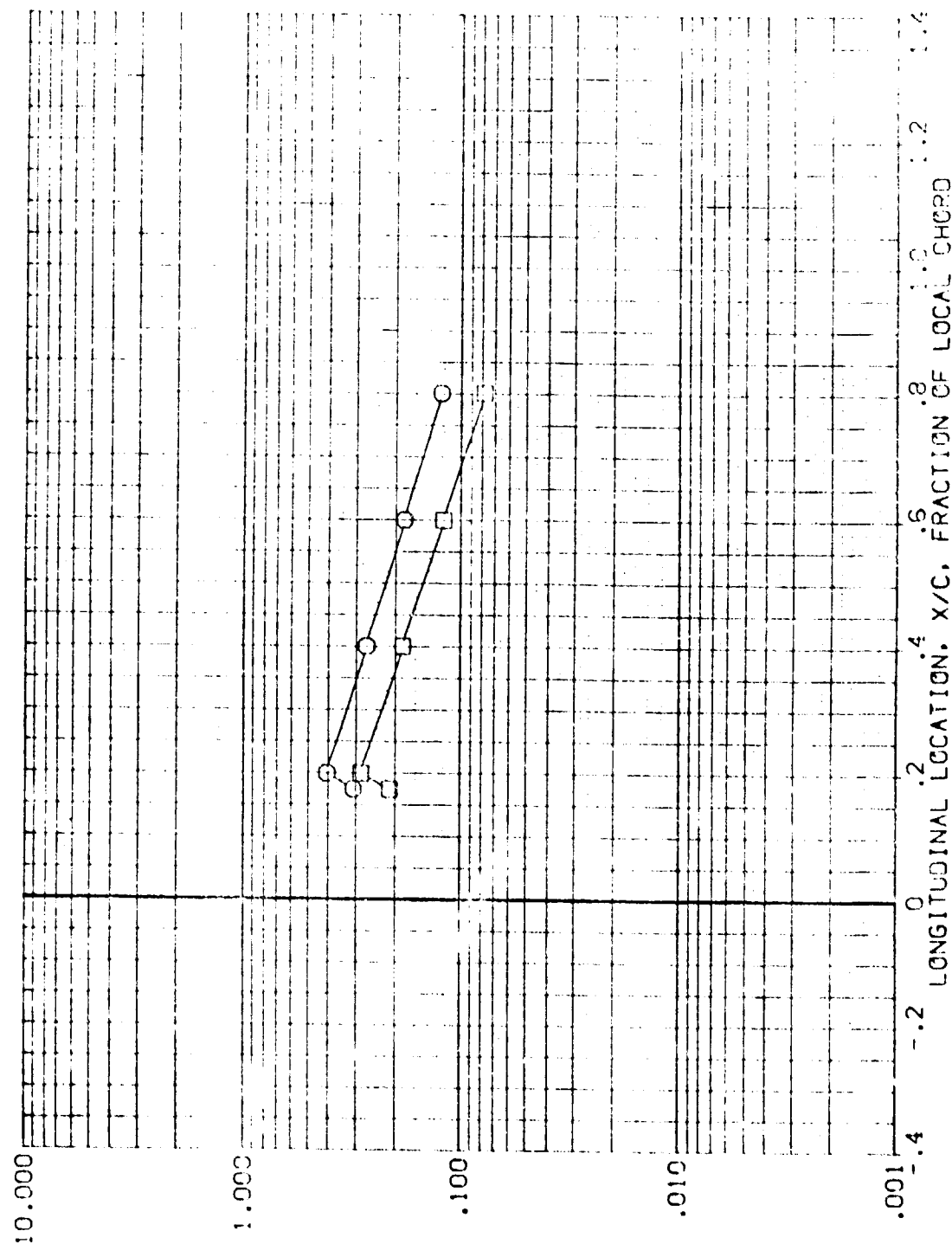


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQW01) IN:8 810C507W87M3F4V5 T8
 (RQW04) IN:8 810C507W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 5.000

ORBITER WING
 ORBITER WING

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

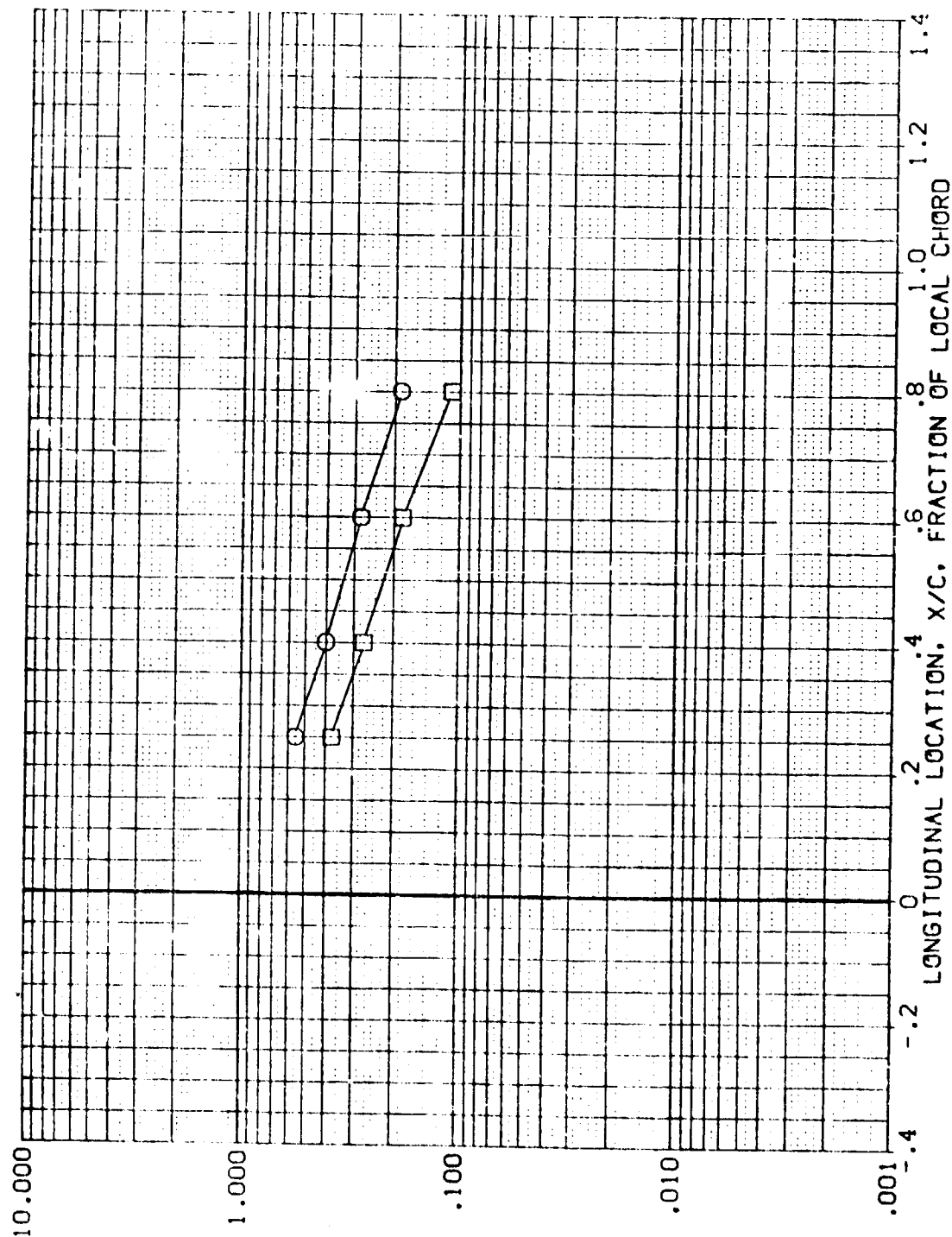


FIG 11 ORBITER + ET - WING DATA - NO TRIPS

RN/L = 4.778 HAW/HT = 1.000 2Y/B = .800

IH18 B10C5D7W87M3F4V5 T8 X26 ORBITER WING (RQMWC5)

SYMBOL	2Y/B	HA/H	IN/L	PARAMETRIC VALUES
◇	.400	.850	4.700	ALPHA
□	.600			MACH
○	.800			X-UT
				-5.000
				BETA
				6.000
				DELTA
				.047

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS - H/HREF

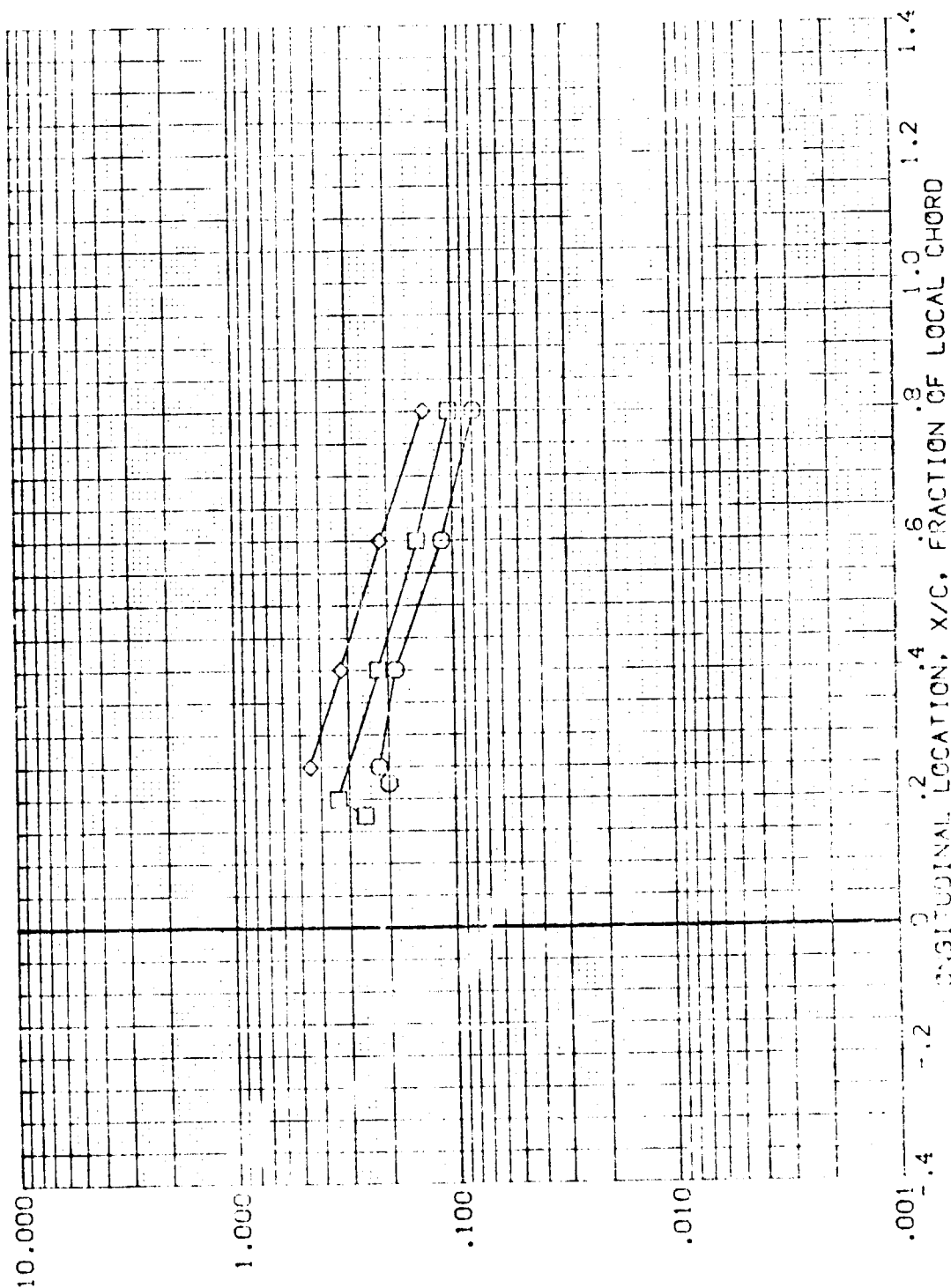


FIG 12 ORBITER + ET - WING DATA - LARGE TRIPS

1H18 B:0C5D7W87M3F4V5 T8 X26 ORBITER WING (RQMWO5)
 SYMBOL 2Y/B HAV/HT RN/L
 .400 .300 4.700
 .600
 .800

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .047

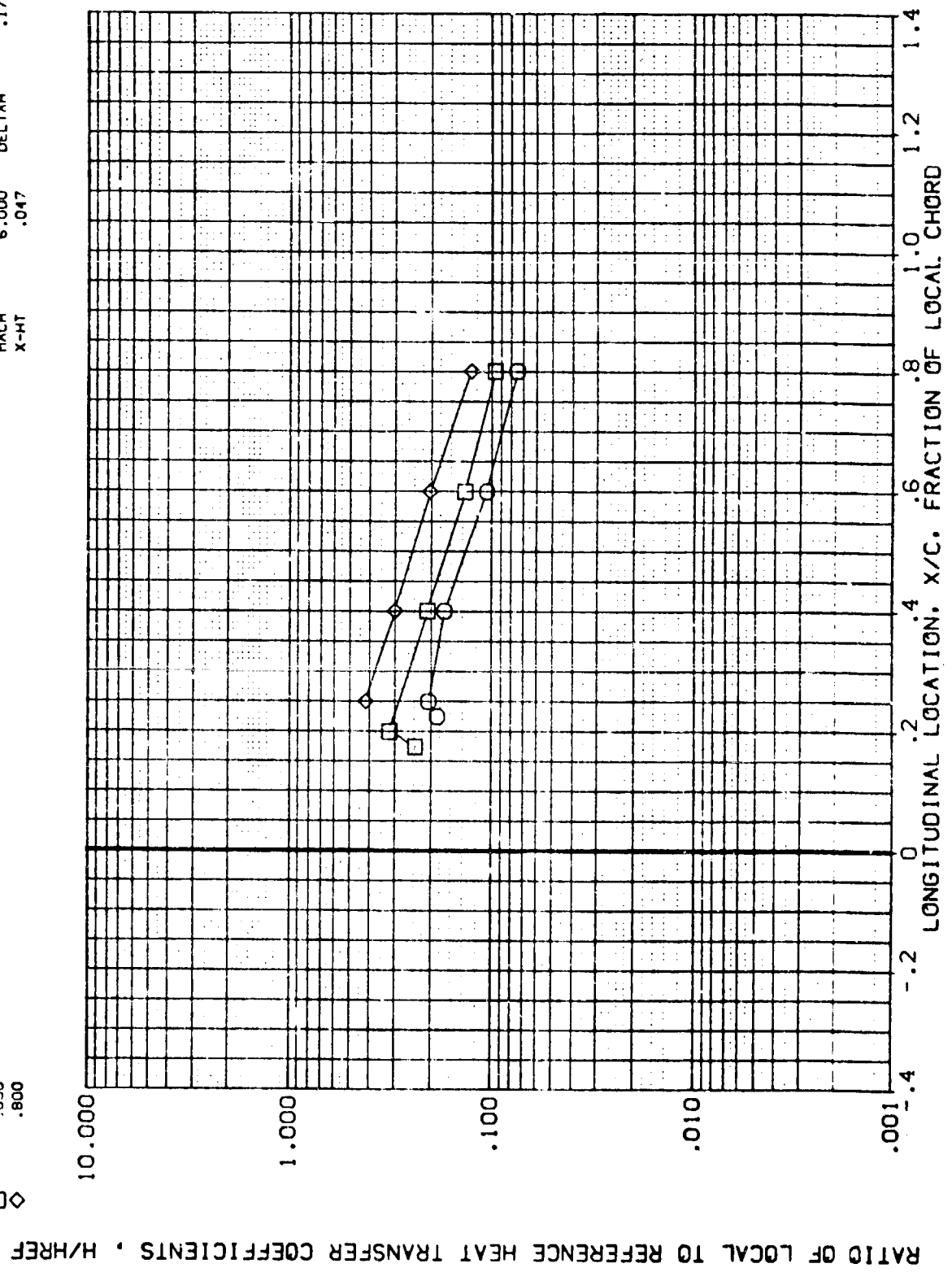


FIG 12 ORBITER + ET - WING DATA - LARGE TRIPS

1418 B10C5D/W87M3F4V5 T8 X26 ORBITER WING (RQMWO5)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .125
 X-HT .047

SYMBOL 2Y/B HAW/HY RN/L
 .400 1.000 4.700
 .600
 .800

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

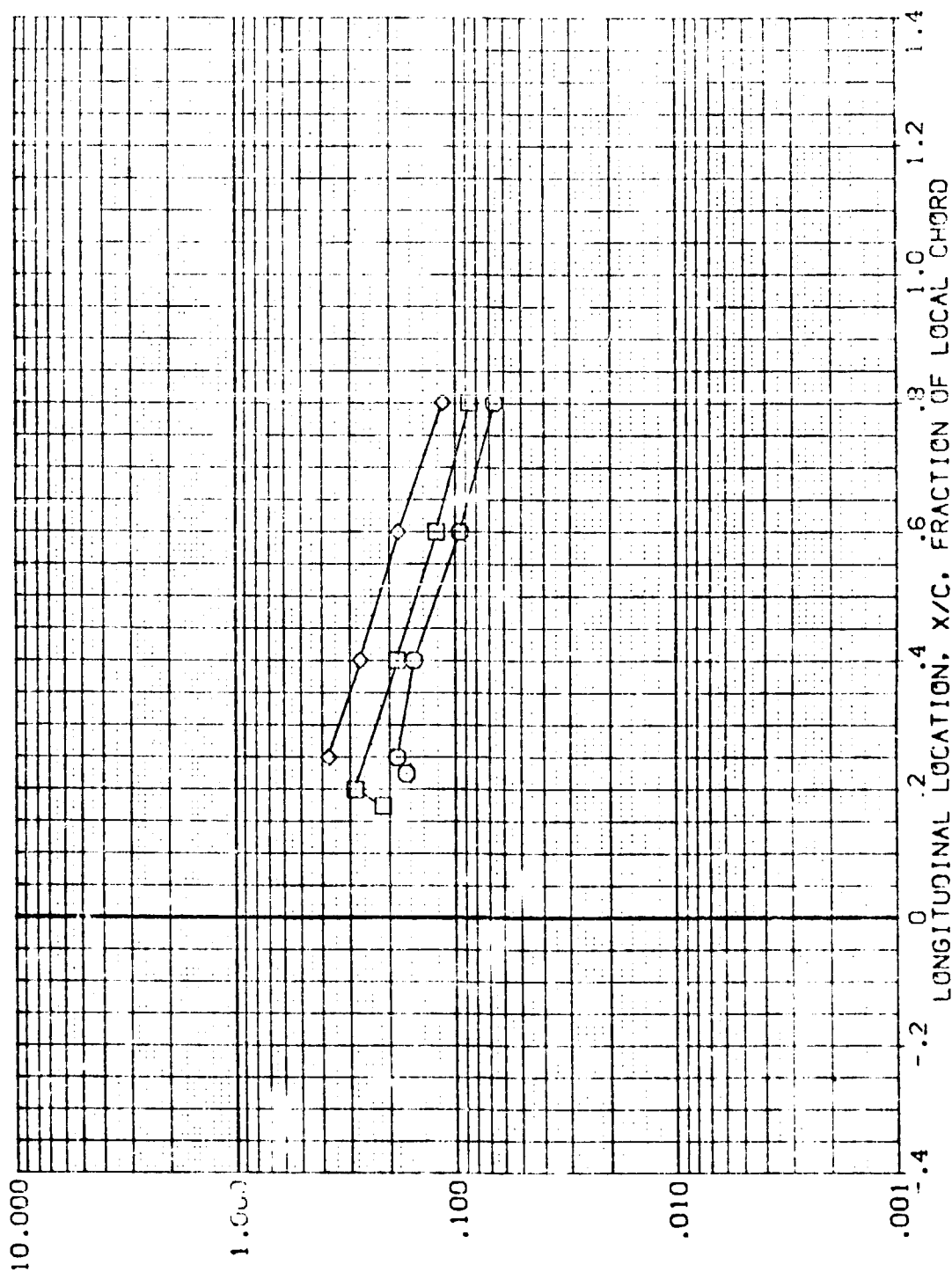


FIG 12 ORBITER + ET - WING DATA - LARGE TRIPS

1H18 B10C507W87M3F4V5 T8 X26 ORBITER WING (RQMW11)

SYMBOL	2Y/B	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	DELTA	DELTAH
◇	.400	.850	4.728	.000	.000	.031	.000
□	.600			.000	.000		.175
○	.800						

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

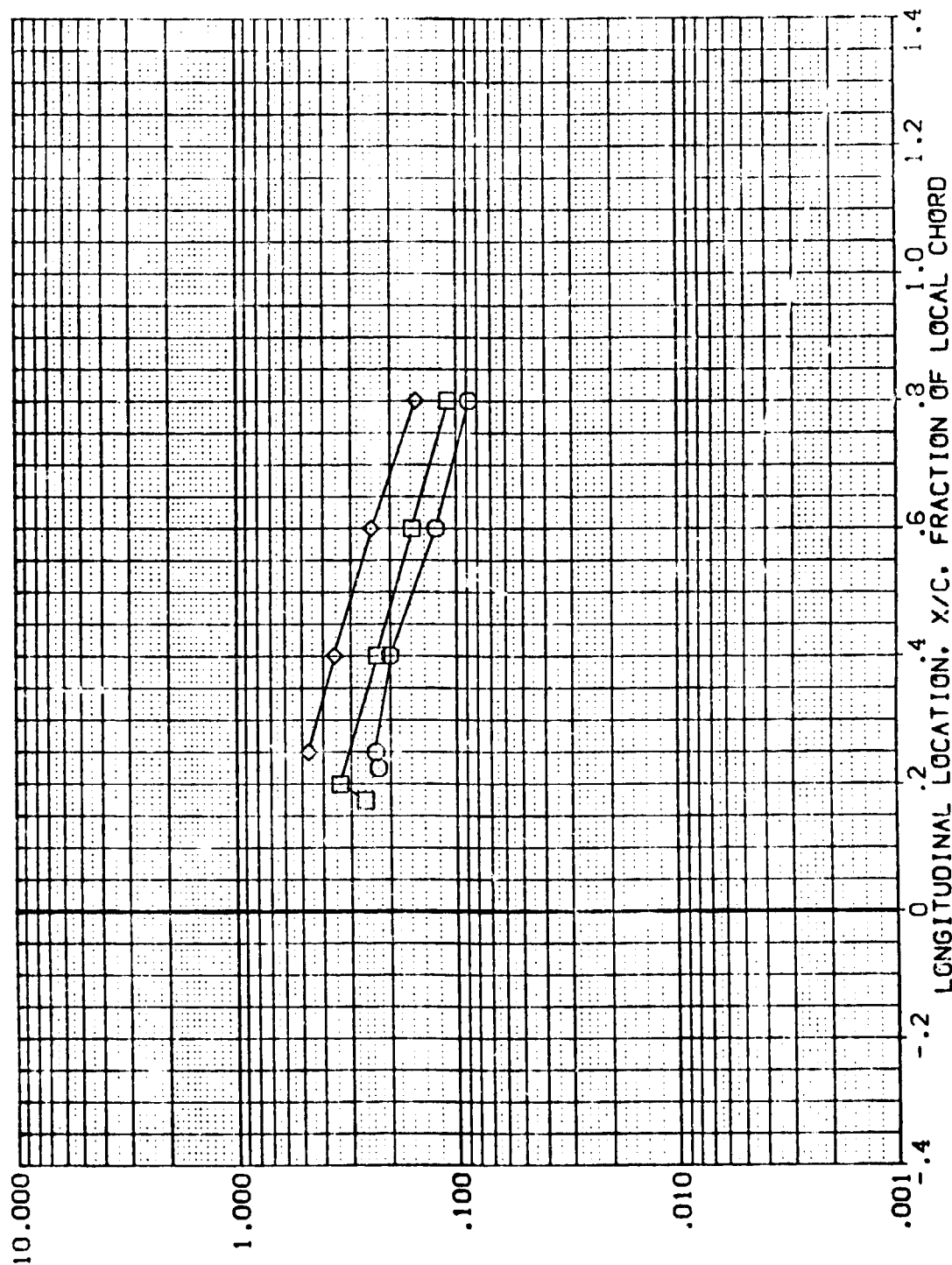


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

IH18 B10C507W87M3F4V5 T8 X26 ORBITER WING (RQMW11)

SYMBOL	2Y/B	HAB/HT	RN/L	PARAMETRIC VALUES
◇	.400	.900	4.728	ALPHA .000 BETA .000
□	.600			MACH 6.000 DELTAH .175
○	.800			X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

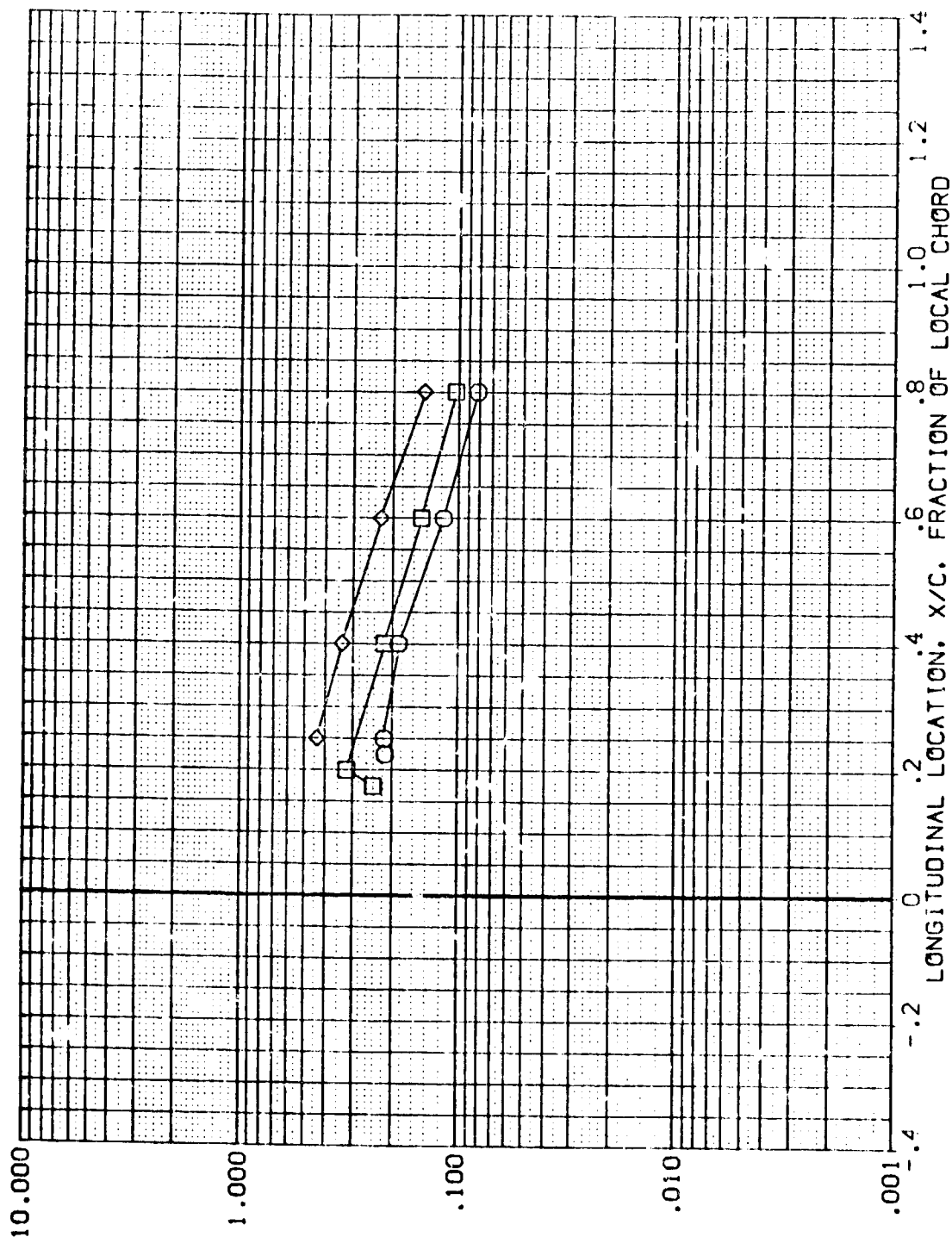


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

1418 B10C5D/W87M3F4V5 T8 X26 ORBITER WING (RQMW11)

SYMBOL
 □
 ○
 ◇

2Y/B .400
 .600
 .800
 HAW/HT 1.000
 RN/L 4.728

PARAMETRIC VALUES
 ALPHA .000
 MACH 5.000
 X-HT .031
 BETA .000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

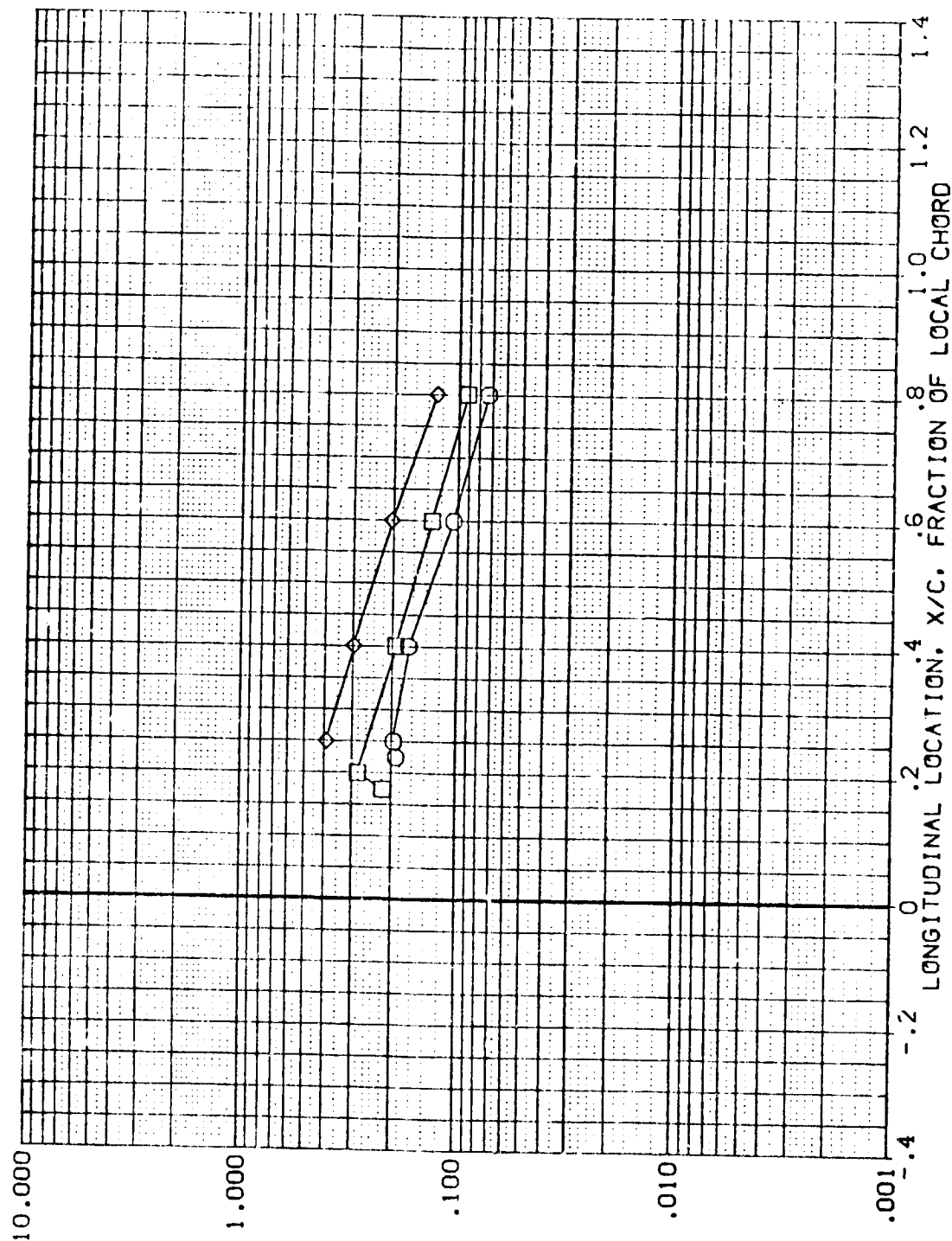


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

IHI8 B10C507W87M3F4V5 T8 X26 ORBITER WING (RQMW18)

SYMBOL	2Y/B	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	MACH	DELTAH
◇	.400	.850	4.481	-5.000	.000	6.000	.030
○	.600						
□	.800						

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

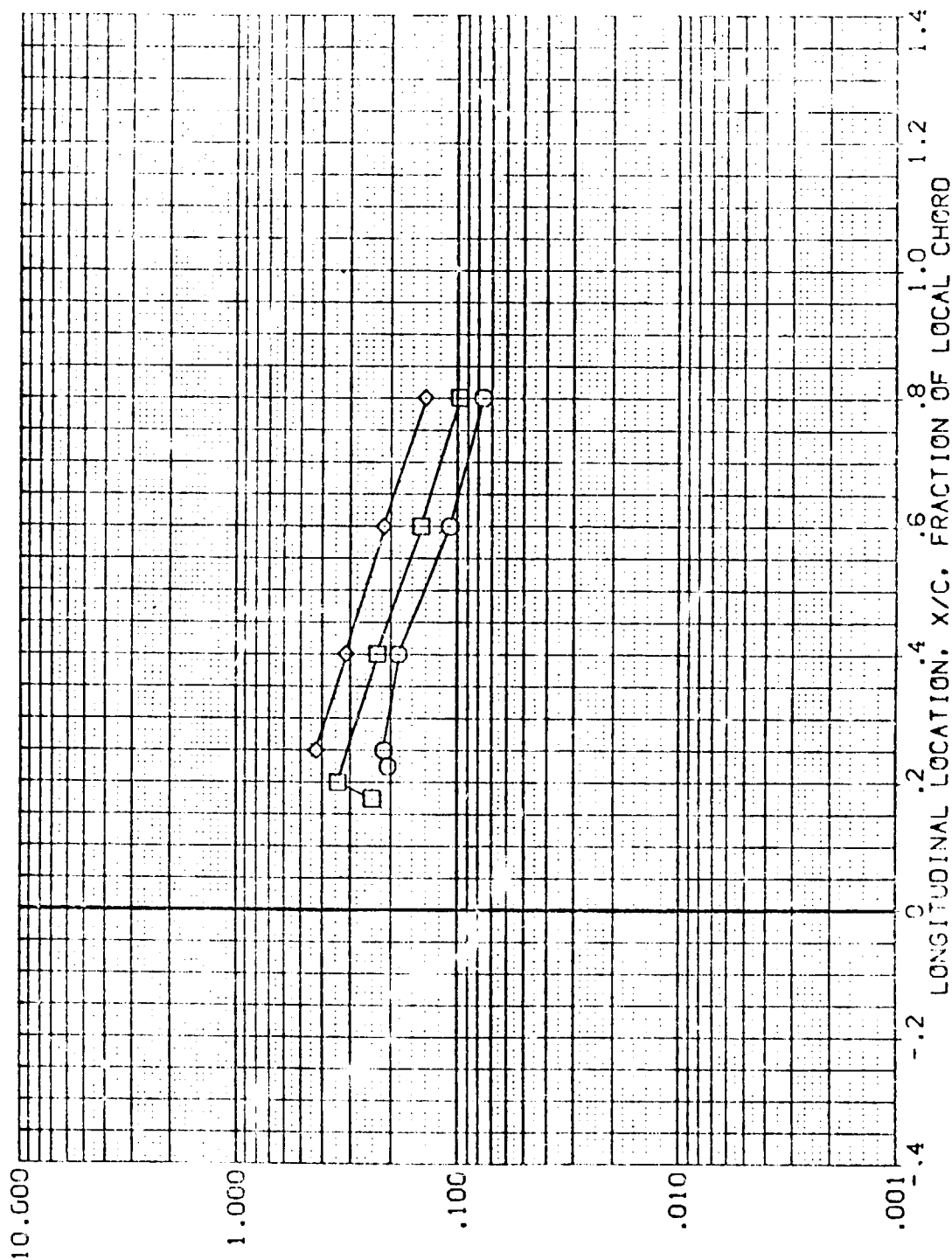


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

1418 810C507W87M3F4V5 T8 X26 ORBITER WING (RQM18)

SYMBOL	2Y/B	HAY/HT	RN/L	PARAMETRIC VALUES		
	.400	.900	4.481	ALPHA	BETA	.000
	.600			MACH	DELTAH	.175
	.800			X-HT		.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

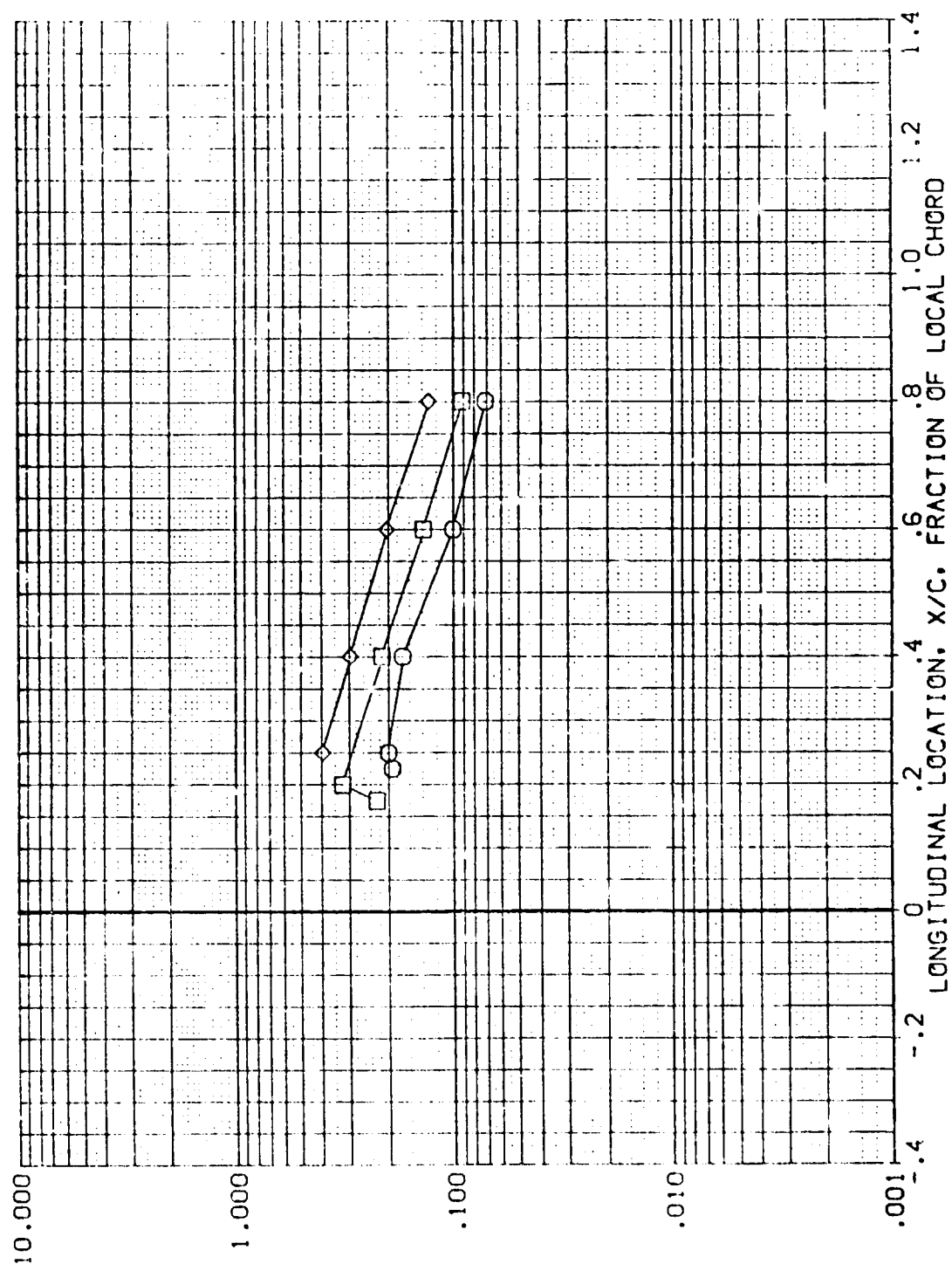


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

IH18 B10C507W87M3F4V5 T8 X26 ORBITER WING (RQMW18)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HY .031

SYMBOL 2Y/B HAW/HT RN/L
 .400 1.000 4.481
 .600
 .800

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

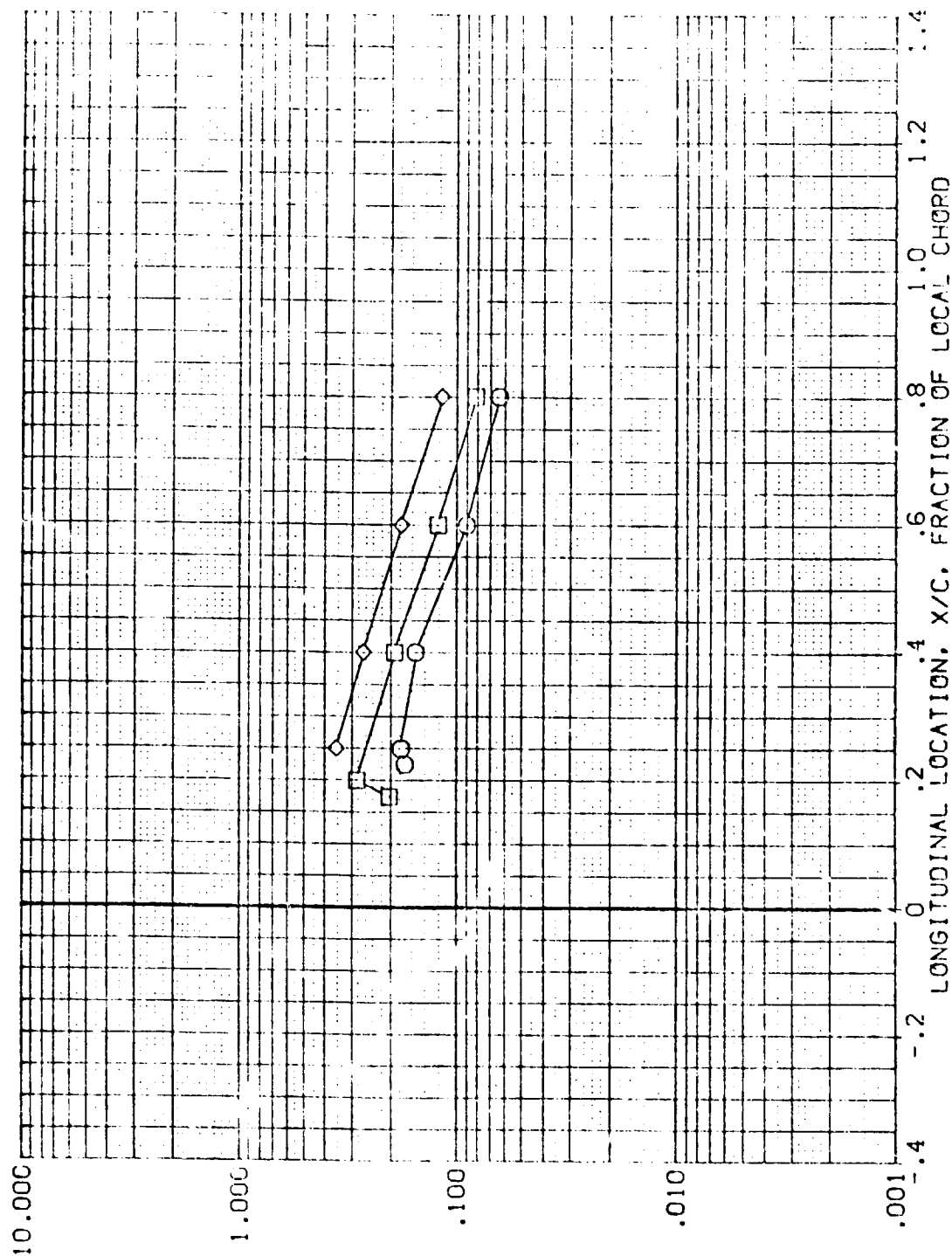


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

DATA SET SYMBOL: (ROMV11) 8
 CONFIGURATION DESCRIPTION: (ROMV19) 1418 B10C507N873411 19 X26 ORBITER WING
 BETA: .000 ALPHA: .000 MACH: 6.000 X-MT: .031

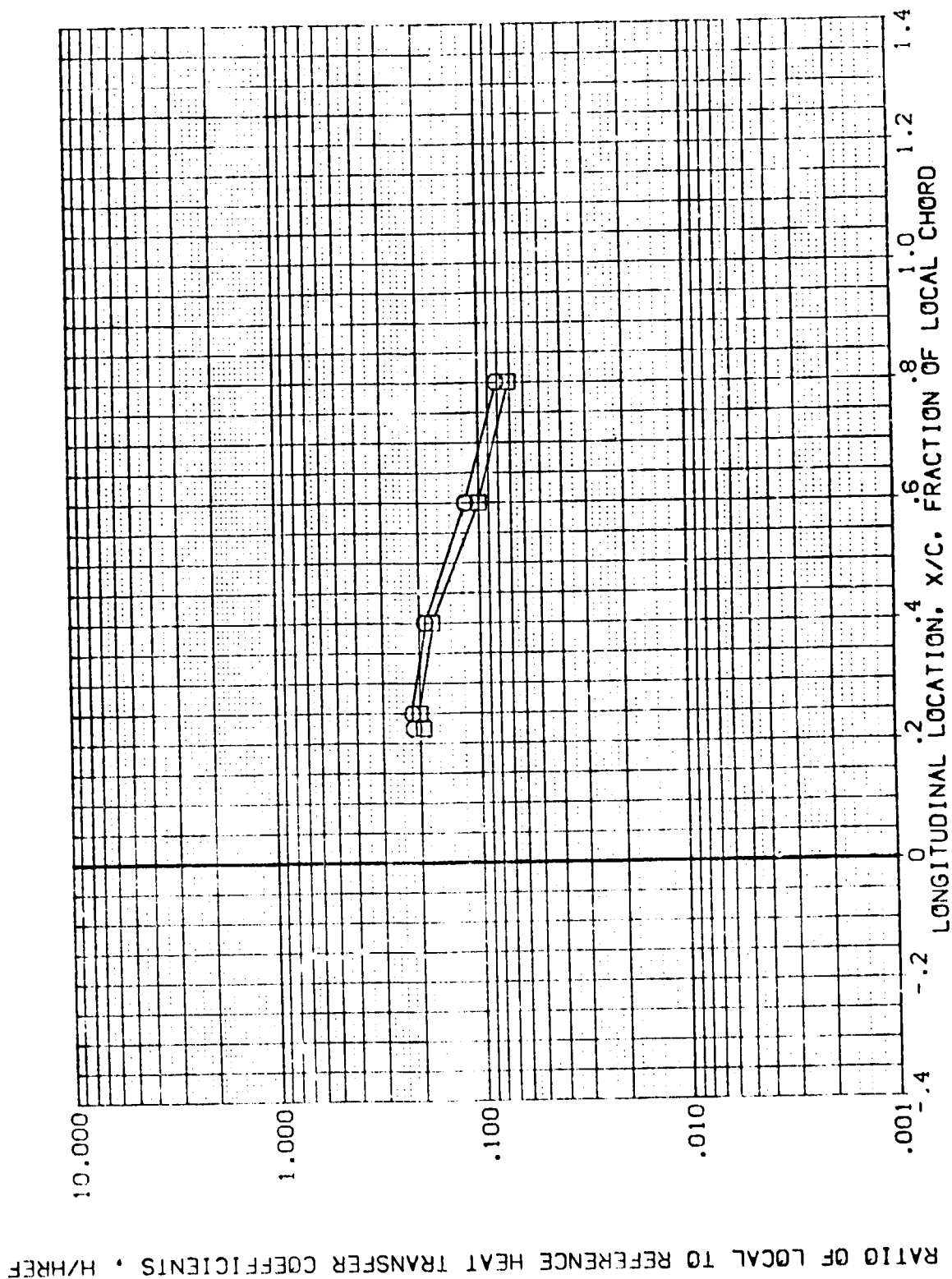


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = .850 2Y/B = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (00000000) 1M18 8100507487434V5 18 X26 ORBITER WING
 (00000000) 1M18 8100507487434V5 18 X26 ORBITER WING

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 .000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

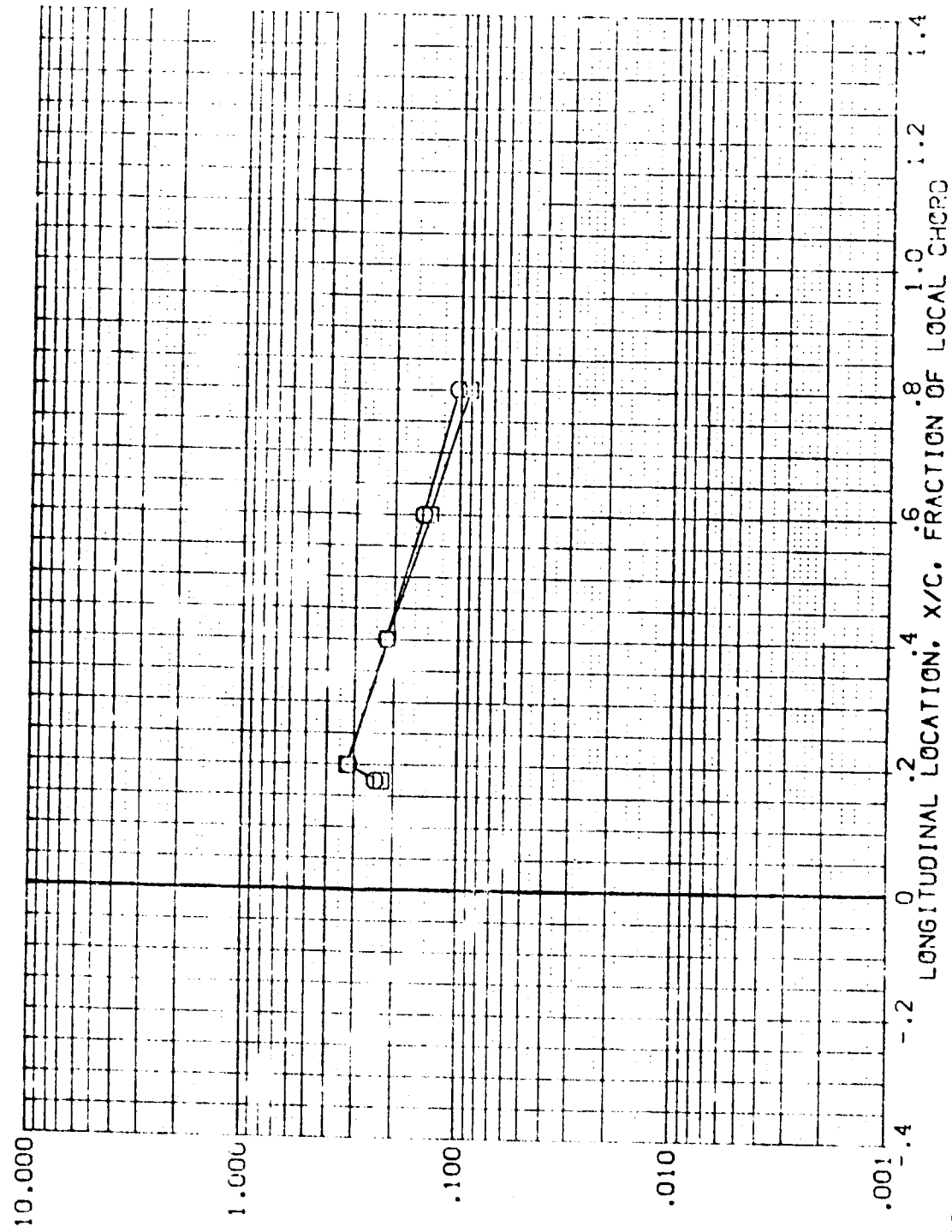


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

RN/L = 4.728 HAX/HT = .850 2Y/B = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(RGMW11) IM19 B10102787M3E4V5 T8 X26 ORBITER WING .000 .000 6.000 .031

(RGMW18) IM19 B10102787M3E4V5 T8 X26 ORBITER WING .000 .000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

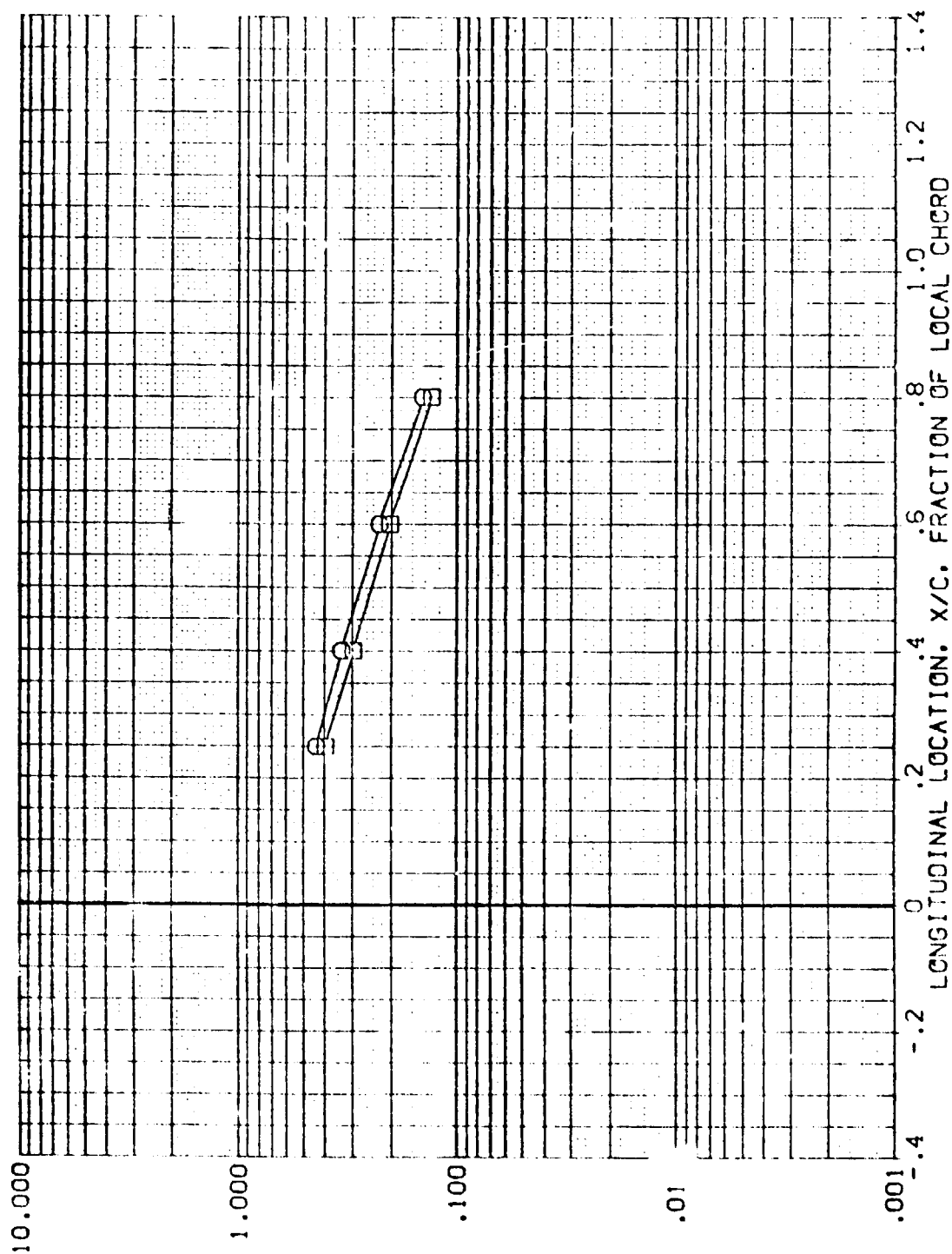


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = .850 2Y/B = .800

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL: (RCHW11) (RCHW18) CONFIGURATION DESCRIPTION: IM18 B10C507W87M3F4V5 T8 X26 ORBITER WING IM18 B10C507W87M3F4V5 T8 X25 ORBITER WING BETA: .000 .000 ALPHA: .000 -5.000 MACH: 5.000 6.000 X-HT: .031 .031

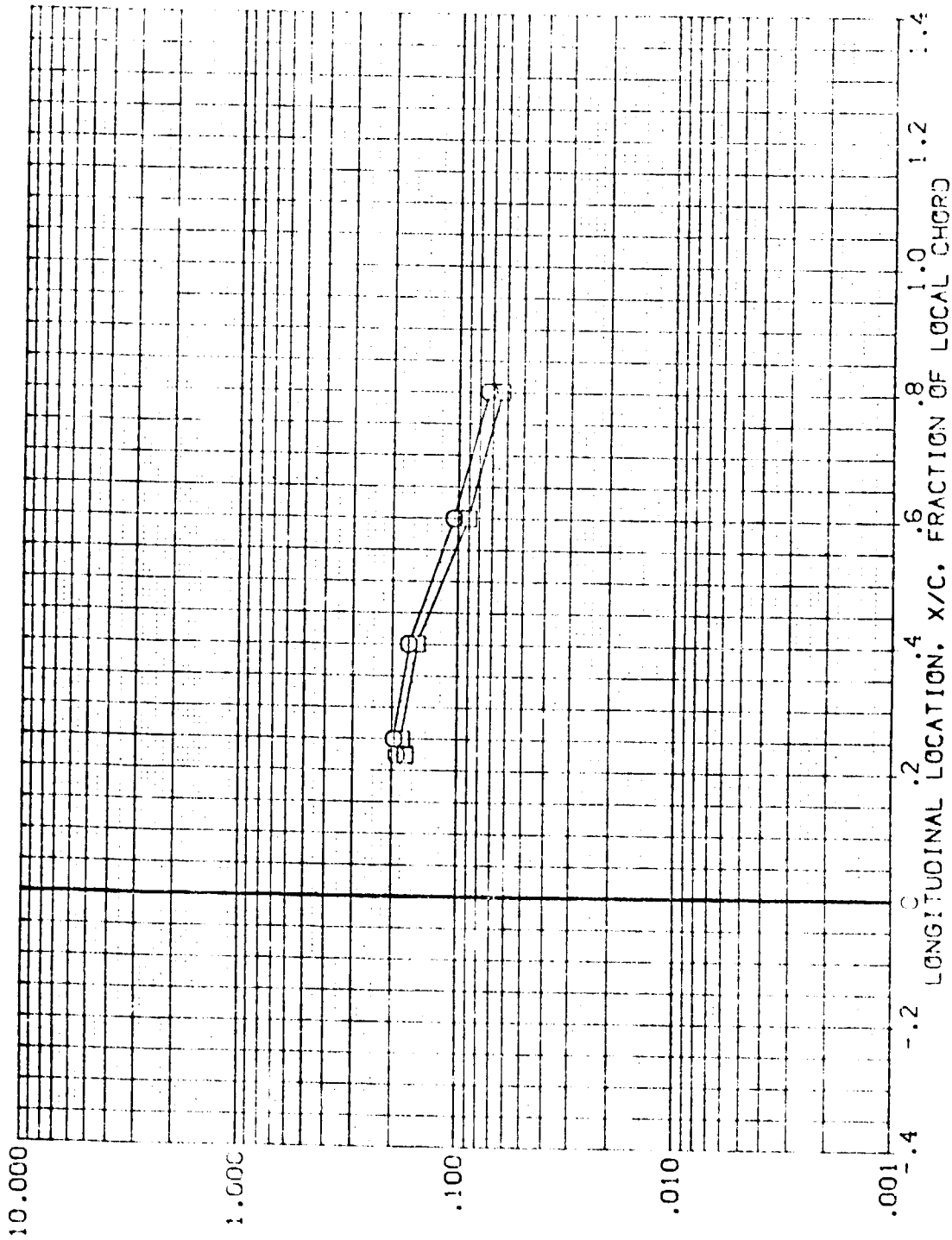


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

$R^*/L = 4.728$ $HAW/HT = 1.000$ $2Y/B = .400$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (PDMW11) () IH19 8100507487M34V5 T8 X26 ORBITER WING
 (PDMW18) () IH14 8100557487M34V5 T8 X26 ORBITER WING

BETA ALPHA MACH X-HT
 .000 .000 6.000 .03;
 .000 -5.000 6.000 .03;

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

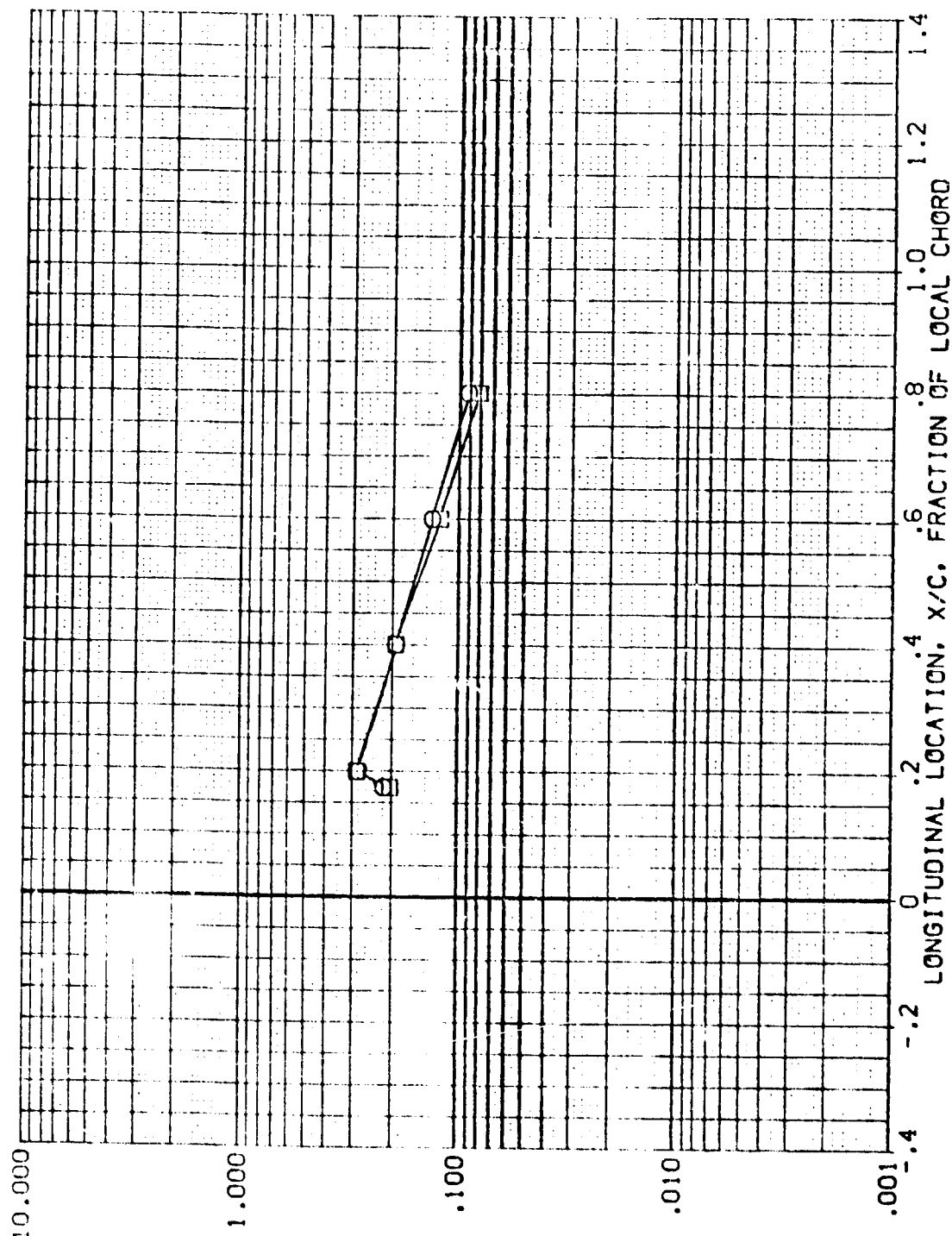


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

RN/L = 4.728 HAW/HT = 1.000 2Y/B = .600

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(ROW11) 8 810C507W87H3F4V5 T8 X26 ORBITER WING .000 .000 6.000 .031

(ROW18) 8 810C507W87H3F4V5 T8 X26 ORBITER WING .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

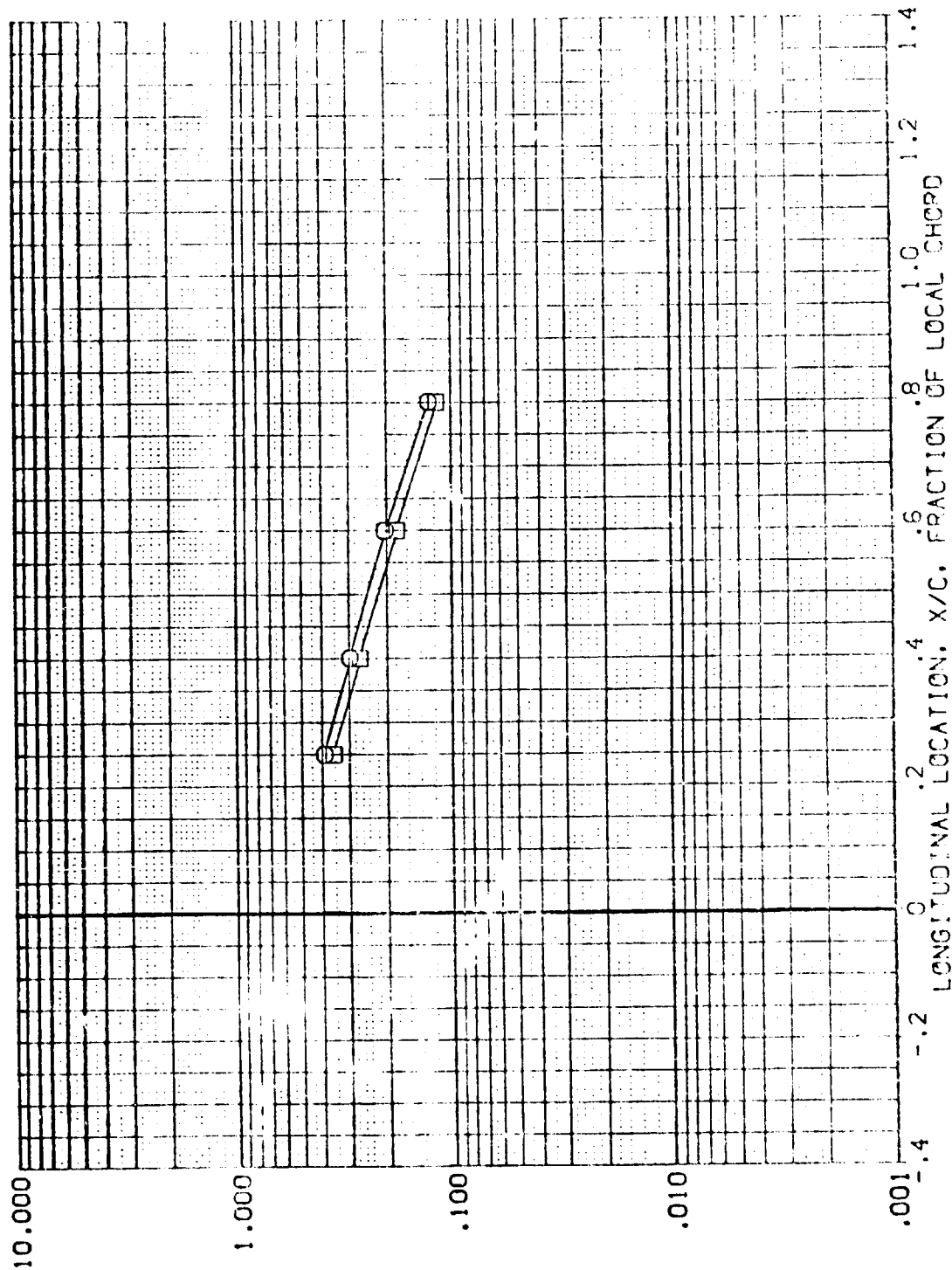


FIG 13 ORBITER + ET - WING DATA - SMALL TRIPS

RN/L = 4.728 HAW/HTE = 1.000 2Y/B = .800

EXTERNAL TANK (RQMT16)

1418 18

PARAMETRIC VALUES
ALPHA .000
MACH 6.000
BETA .000

SYMBOL
67.500
90.000
112.500
135.000
157.500
180.000

MAW/RT .850
RN/L 4.569

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

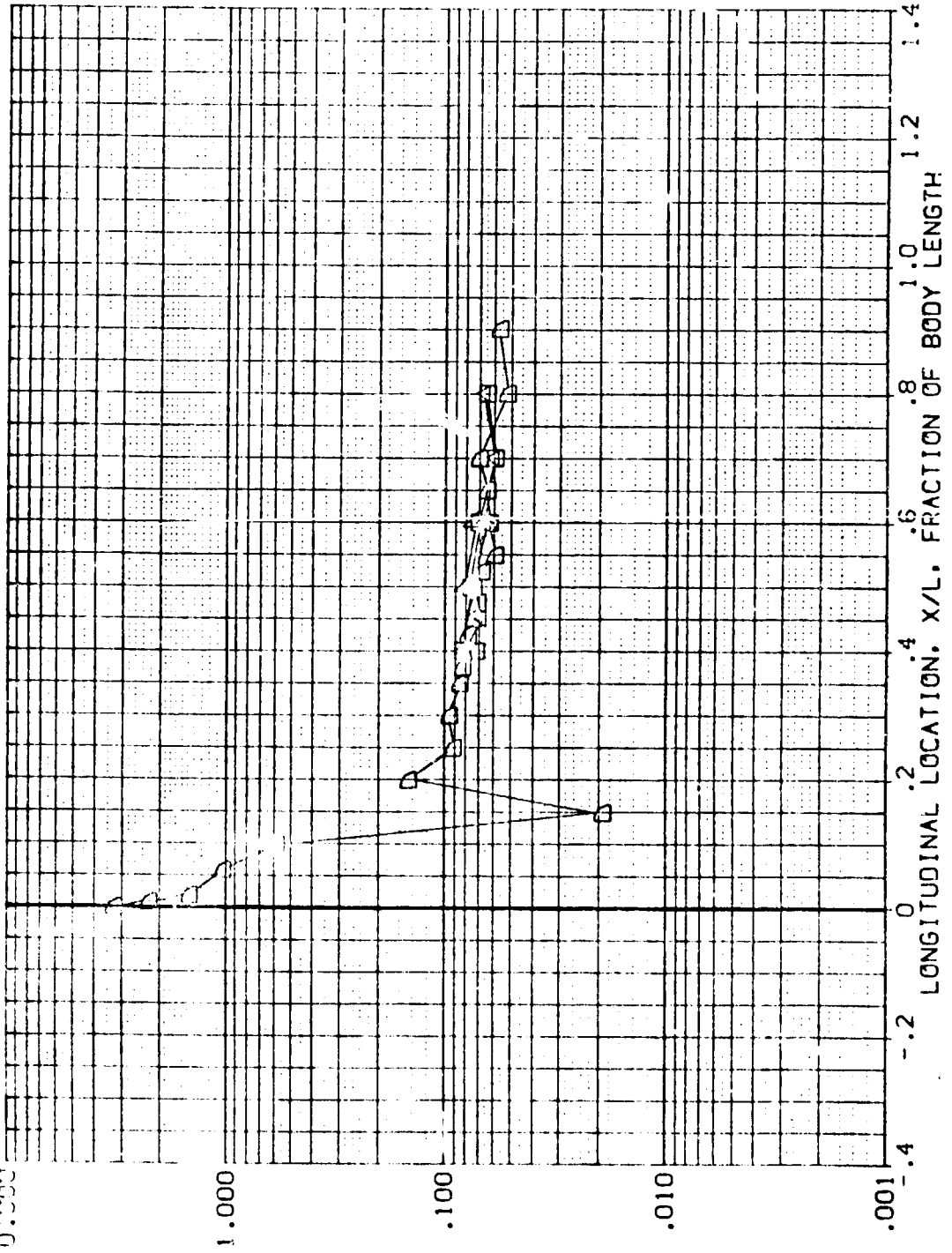


FIG 14 ET ALONE - NO TRIPS

IH18 T8

EXTERNAL TANK (RQMT16)

SYMBOL PH1 HAW/RT RN/L
 07 67.500 .900 4.569
 00 90.000
 00 112.500
 00 135.000
 00 157.500
 00 180.000

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

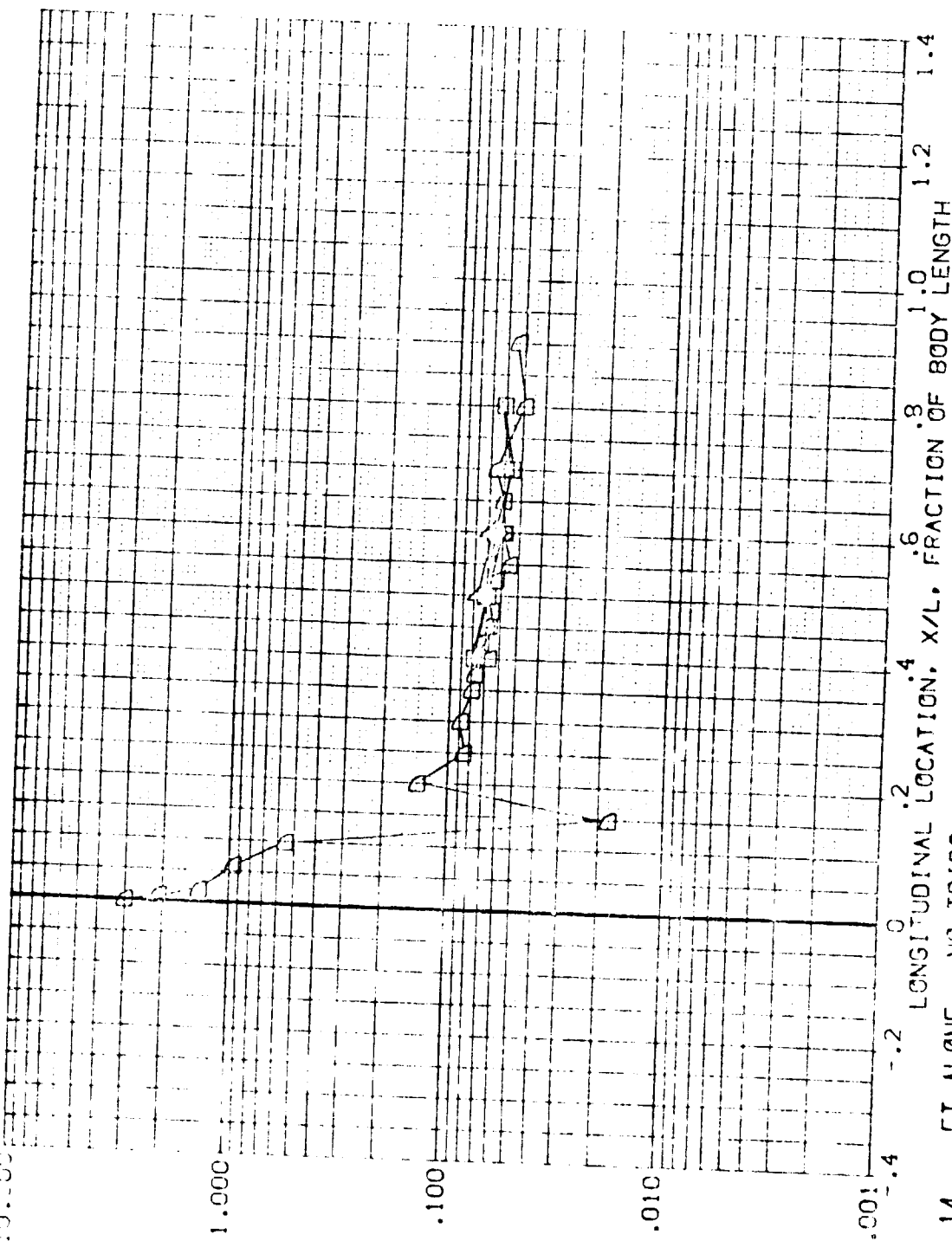


FIG 14 ET ALONE - NO TRIPS



1118 11

EXTERNAL TANK (RQMT16)

SYMBOL PHI MAW/HT RN/L
◇ 67.500
▽ 90.000
◇ 112.500
◇ 135.000
◇ 157.500
◇ 180.000

PARAMETRIC VALUES
ALPHA .000
MACH 6.000
BETA .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

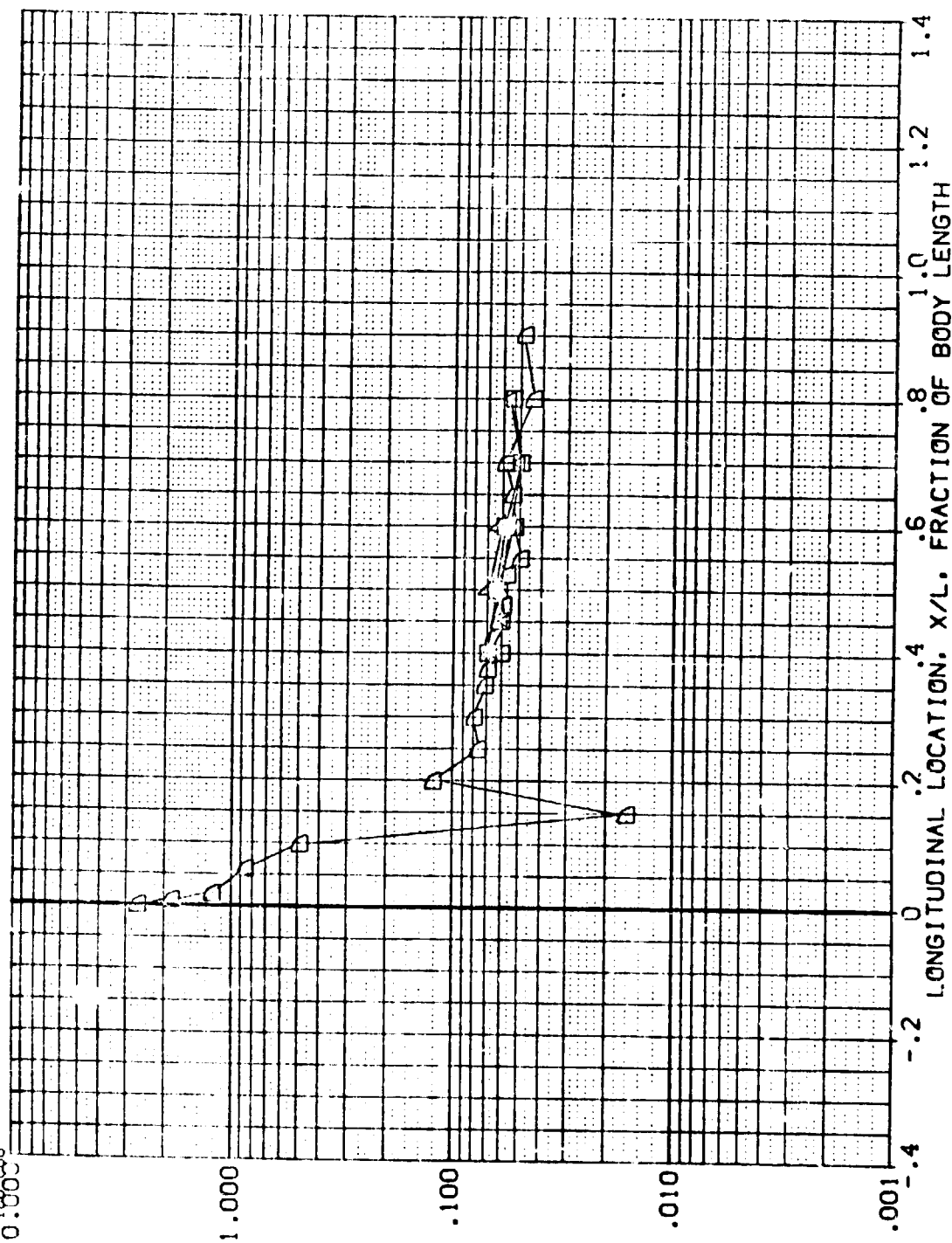


FIG 14 ET ALONE - NO TRIPS

EXTERNAL TANK (RQMT15)

PARAMETRIC VALUES
ALPHA 5.000
BETA 6.000
MACH .000

IH18 T8
HAW/MT .850
RN/L 4.580

PHI
67.500
90.000
112.500
135.000
157.500
180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

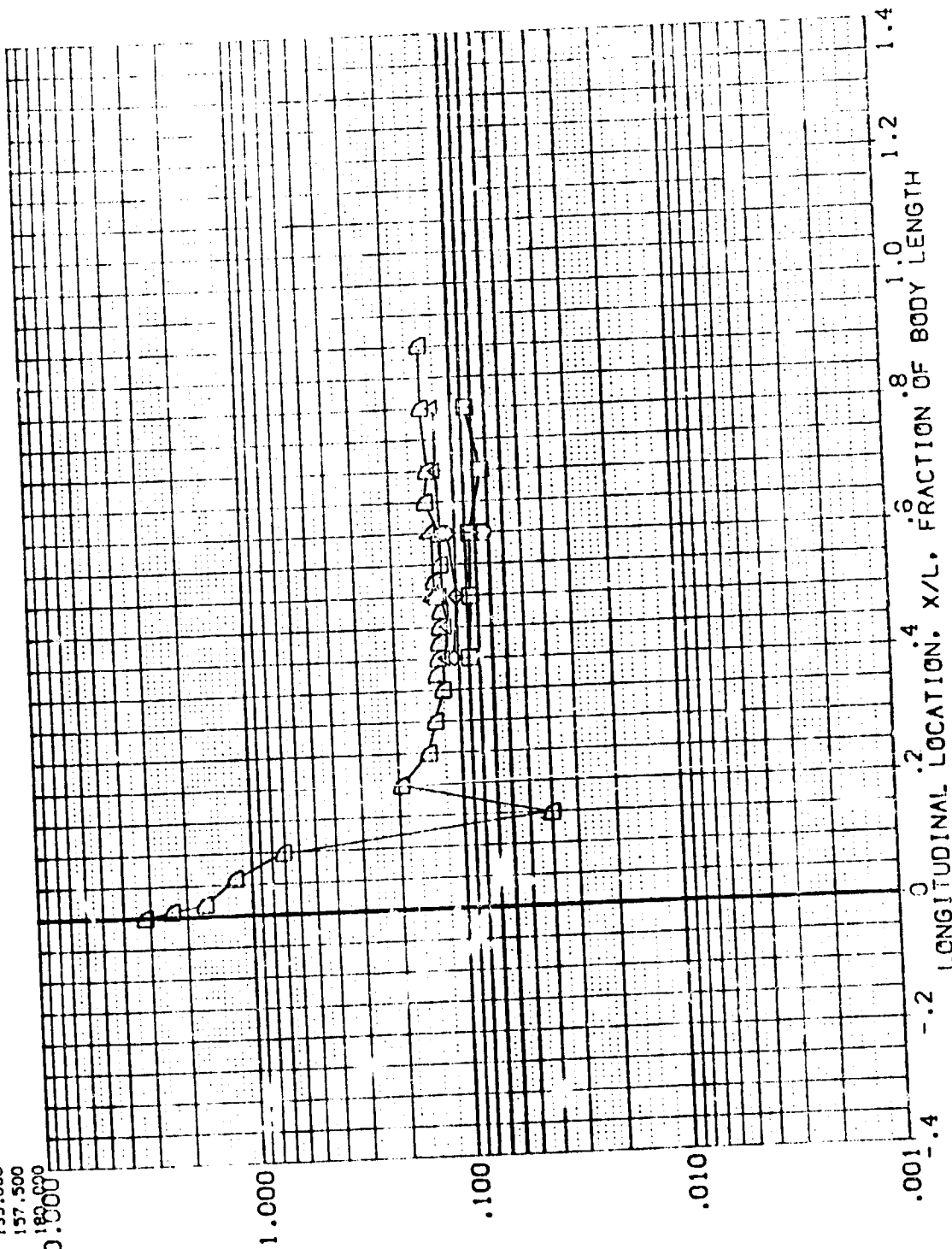


FIG 14 ET ALONE - NO TRIPS

EXTERNAL TANK (RQMT15)

IH18 T8

PARAMETRIC VALUES
ALPHA -5.000 BETA .000
MACH 6.000

SYMBOL
HI 67.500
90.000
112.500
135.000
157.500
180.000

HAU/HT .900
RN/L 4.500

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

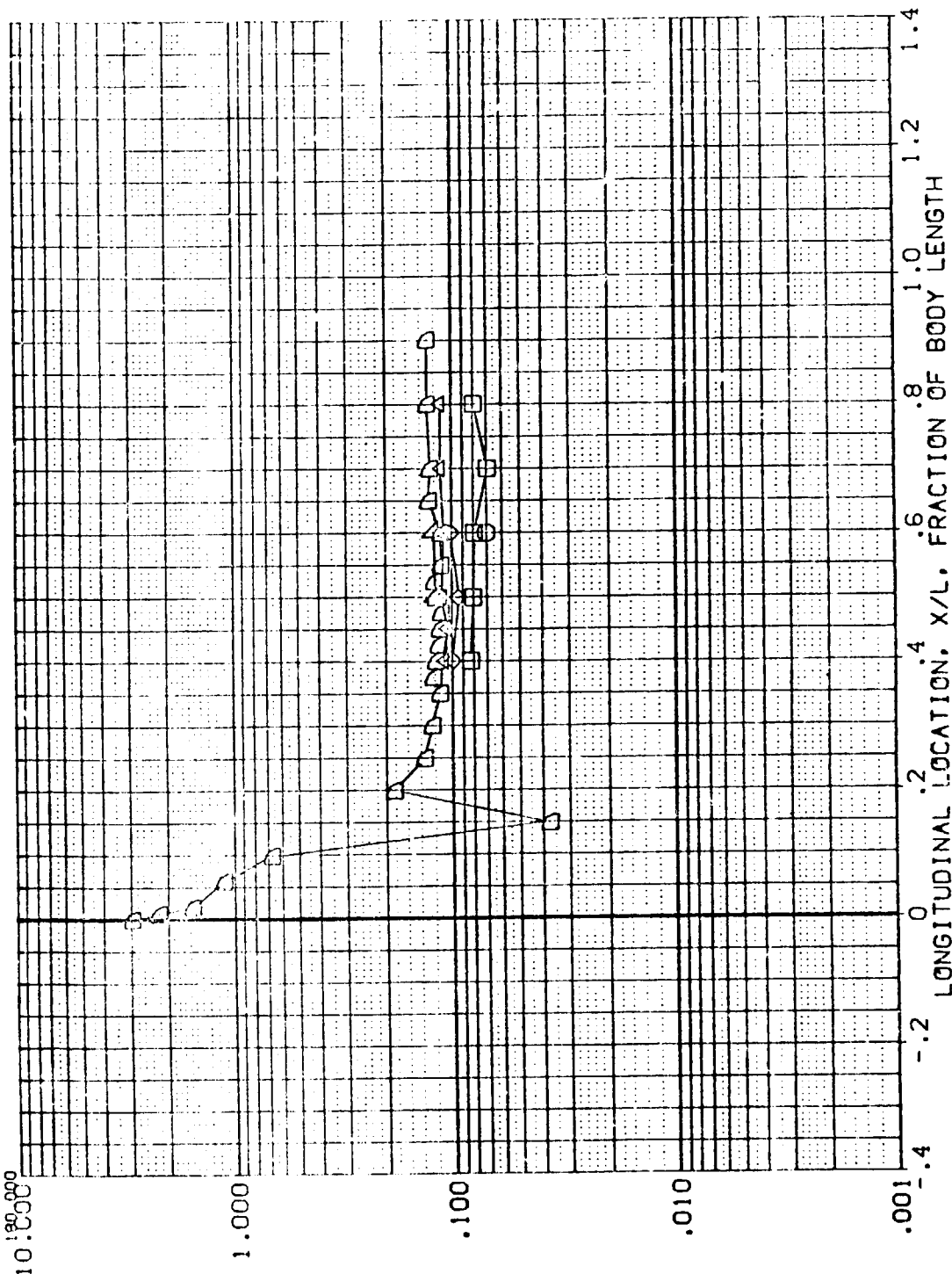


FIG 14 ET ALONE - NO TRIPS

1418 T8

EXTERNAL TANK (RQMT15)

SYMBOL

PHI

HAH/HT

RN/L

4.580

1.000

10.000

112.500

135.000

157.500

180.000

202.500

225.000

247.500

270.000

292.500

315.000

337.500

360.000

382.500

405.000

427.500

450.000

PARAMETRIC VALUES

ALPHA

MACH

-5.000

6.000

BETA

1.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

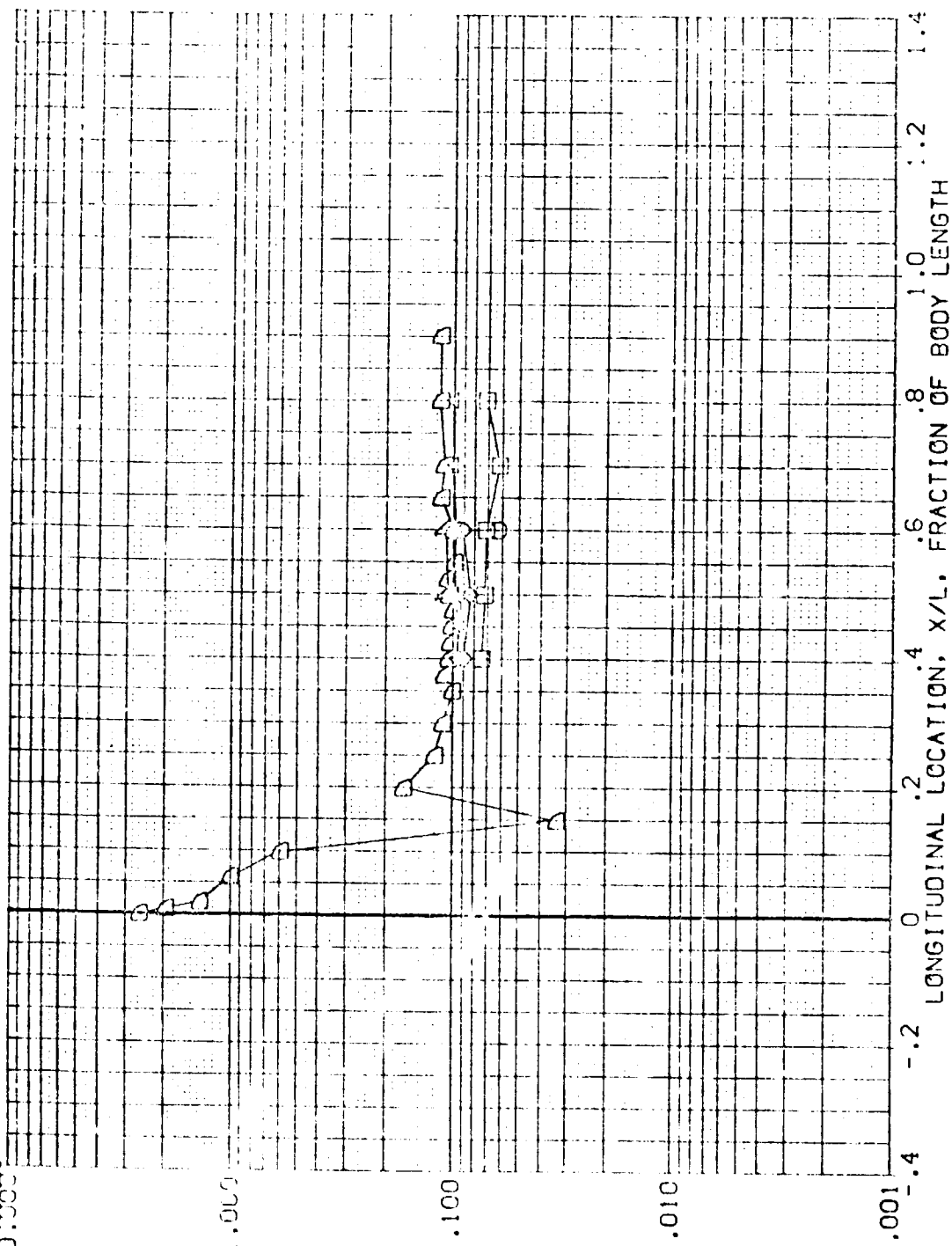


FIG 14 ET ALONE - NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M115) Y8
 (R0M115) Y8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

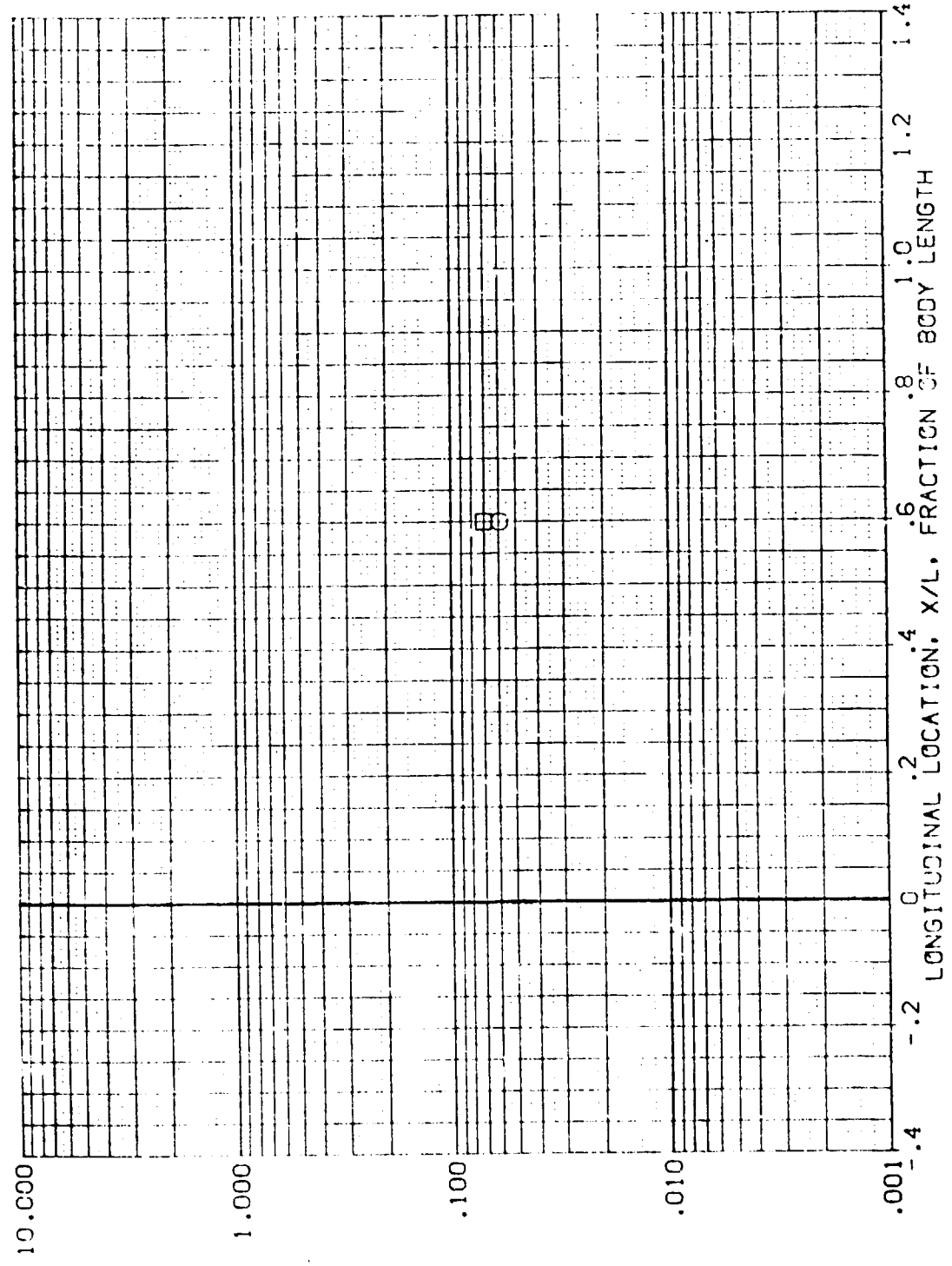


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = .850 PHI = 67.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (PGT:18) [H18 18]
 (PGT:15) [H18 18]

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH
 .000 .000 6.000
 .000 .000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

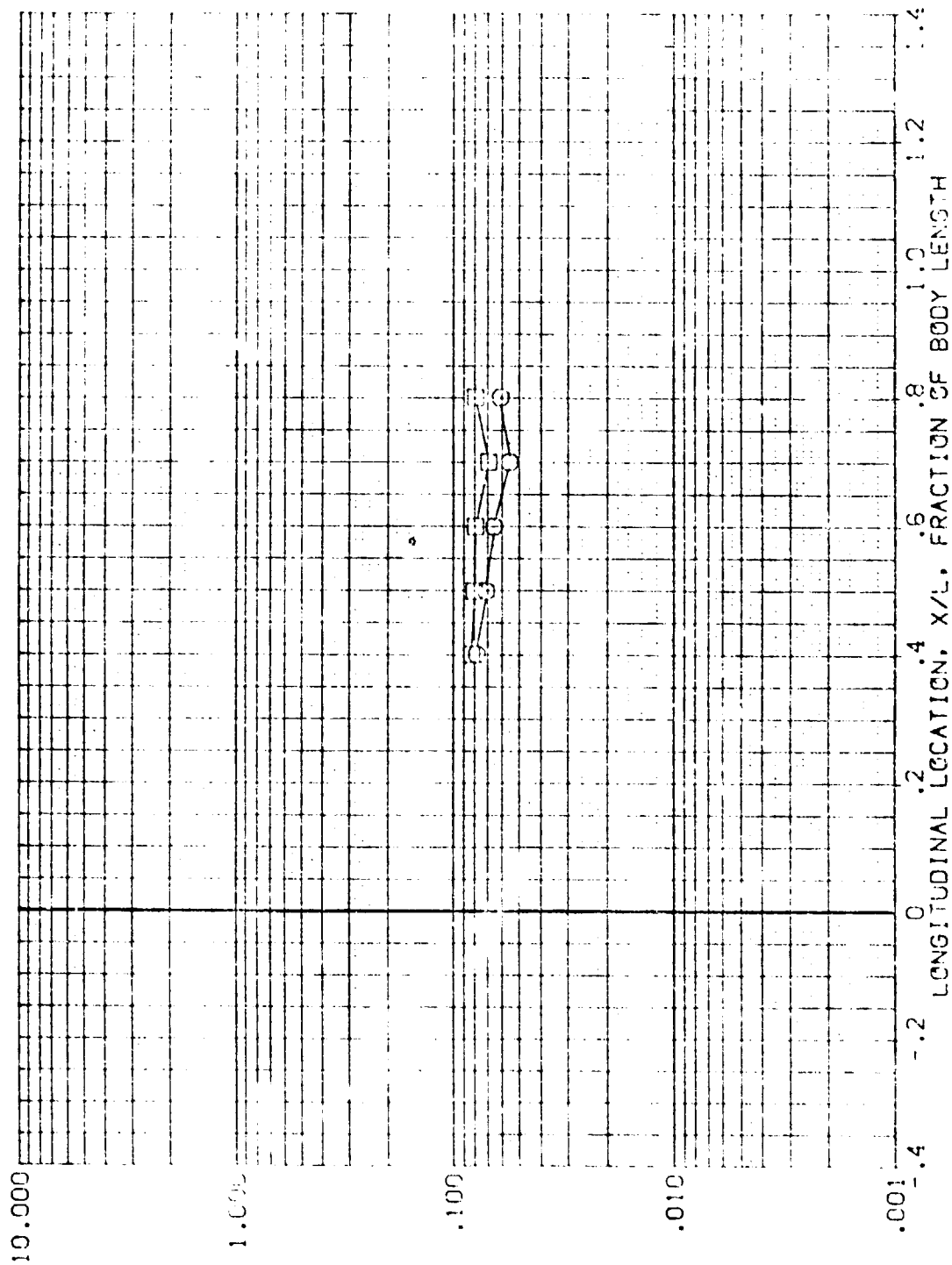


FIG 14 ET ALONE - NO TRIPS

$Re/L = 4.569$ $h_{AW}/h_T = .850$ $PHI = 90.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT16) IM18 TB
 (RMT15) IM18 TB

EXTERNAL TANK ALPHA MACH
 EXTERNAL TANK .000 6.000
 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

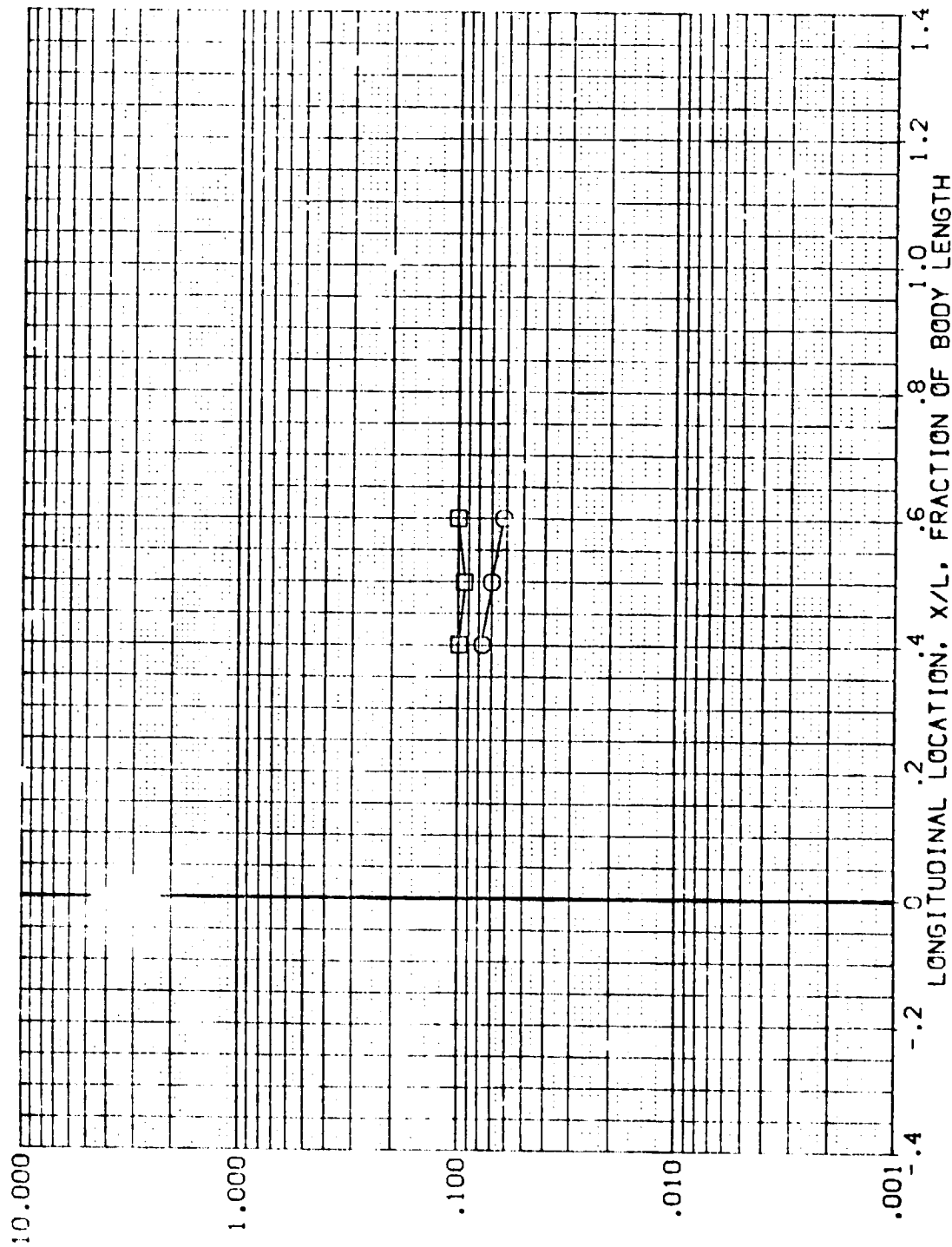


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = .850 PHI = 112.500

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT15) [118] T8
 (RMT15) [118] T8

EXTERNAL TANK
 EXTERNAL TANK

BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

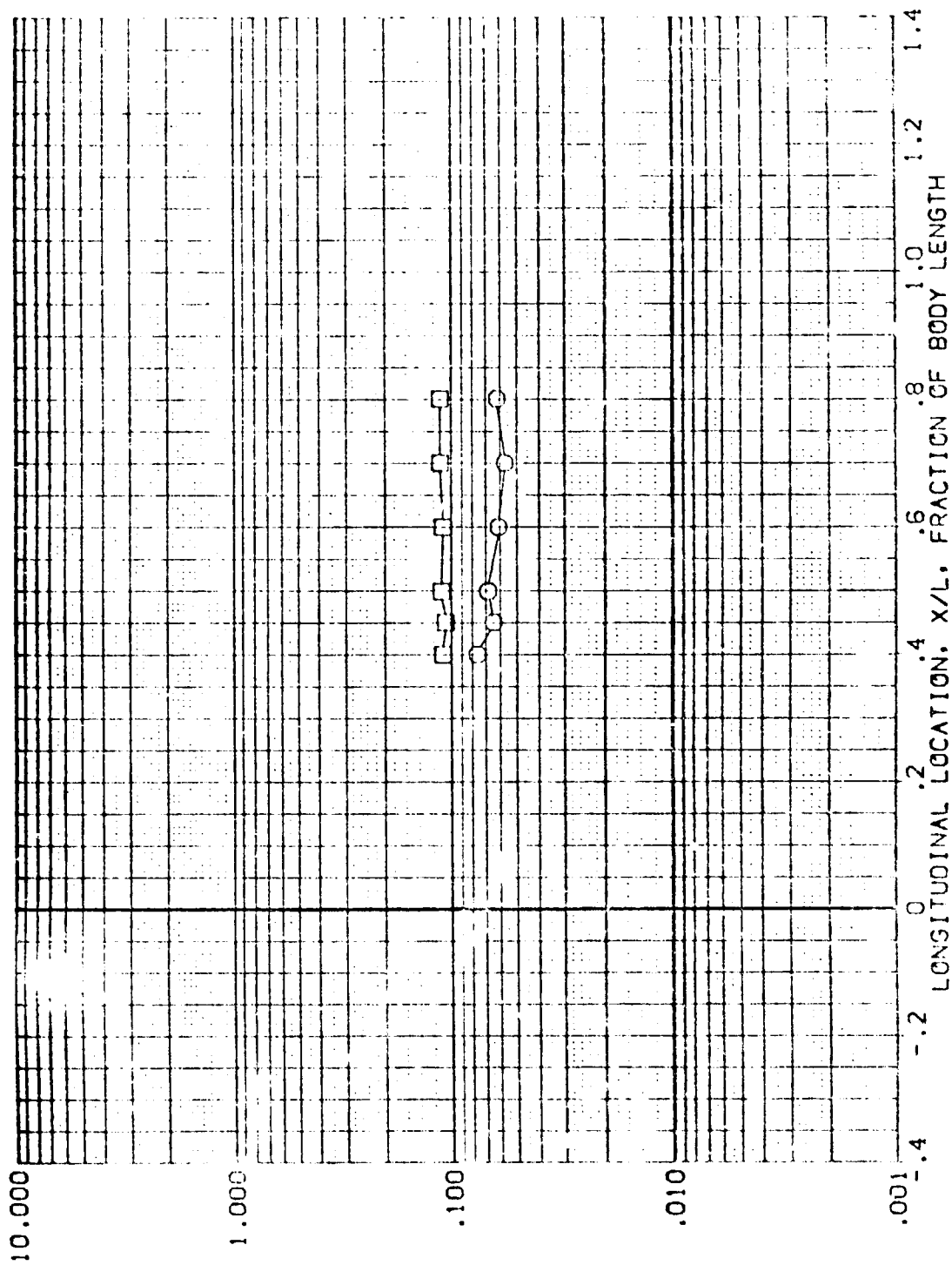


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = .850 PHI = 135.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (ROW 16) (H18 18)
 (ROW 15) (H18 18)

EXTERNAL TANK MACH
 EXTERNAL TANK .000 6.000
 .000 6.000

BETA ALPHA

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

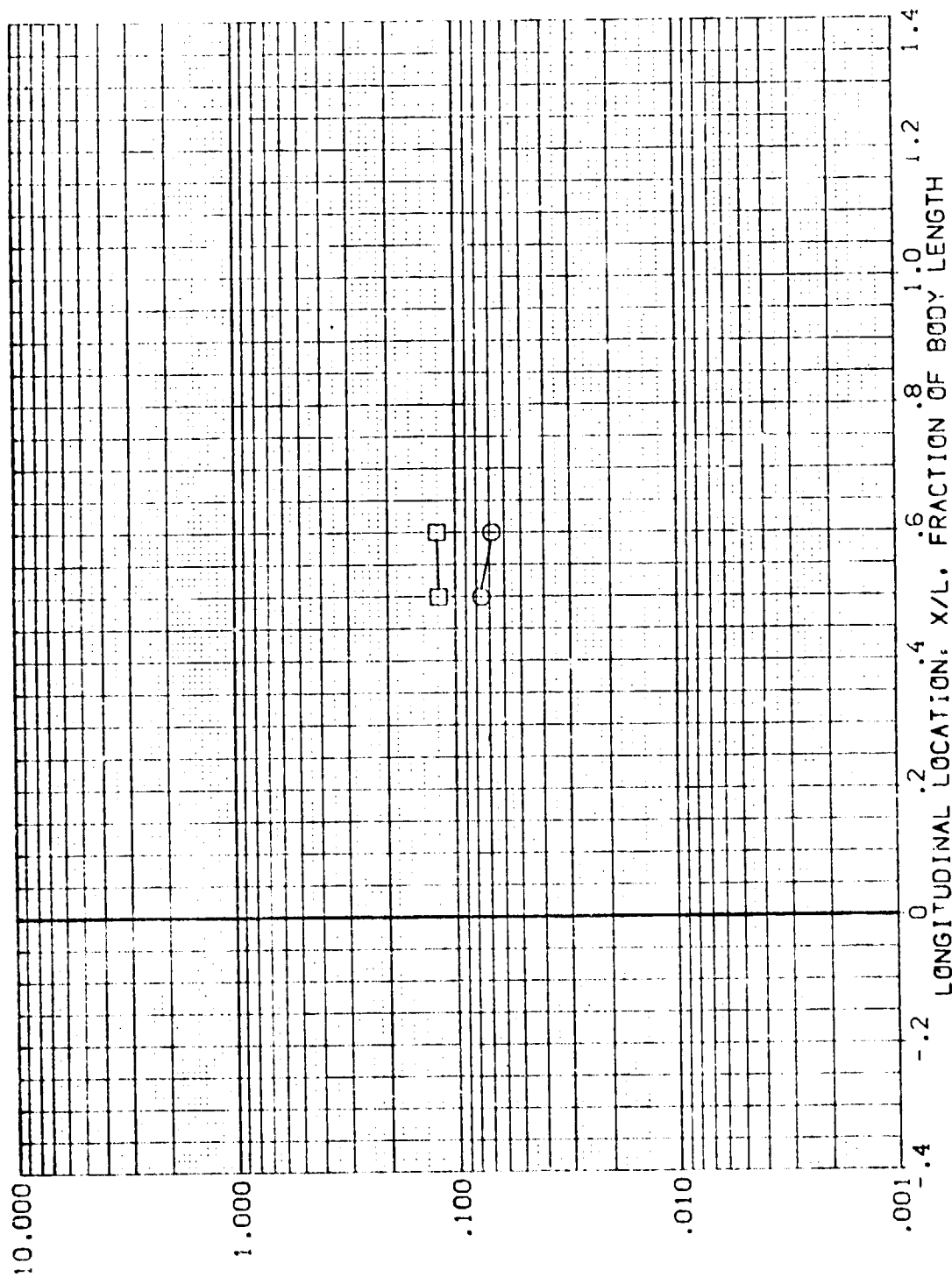


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = .850 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (20MT15) (H)8 18
 (20MT15) (H)8 18

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

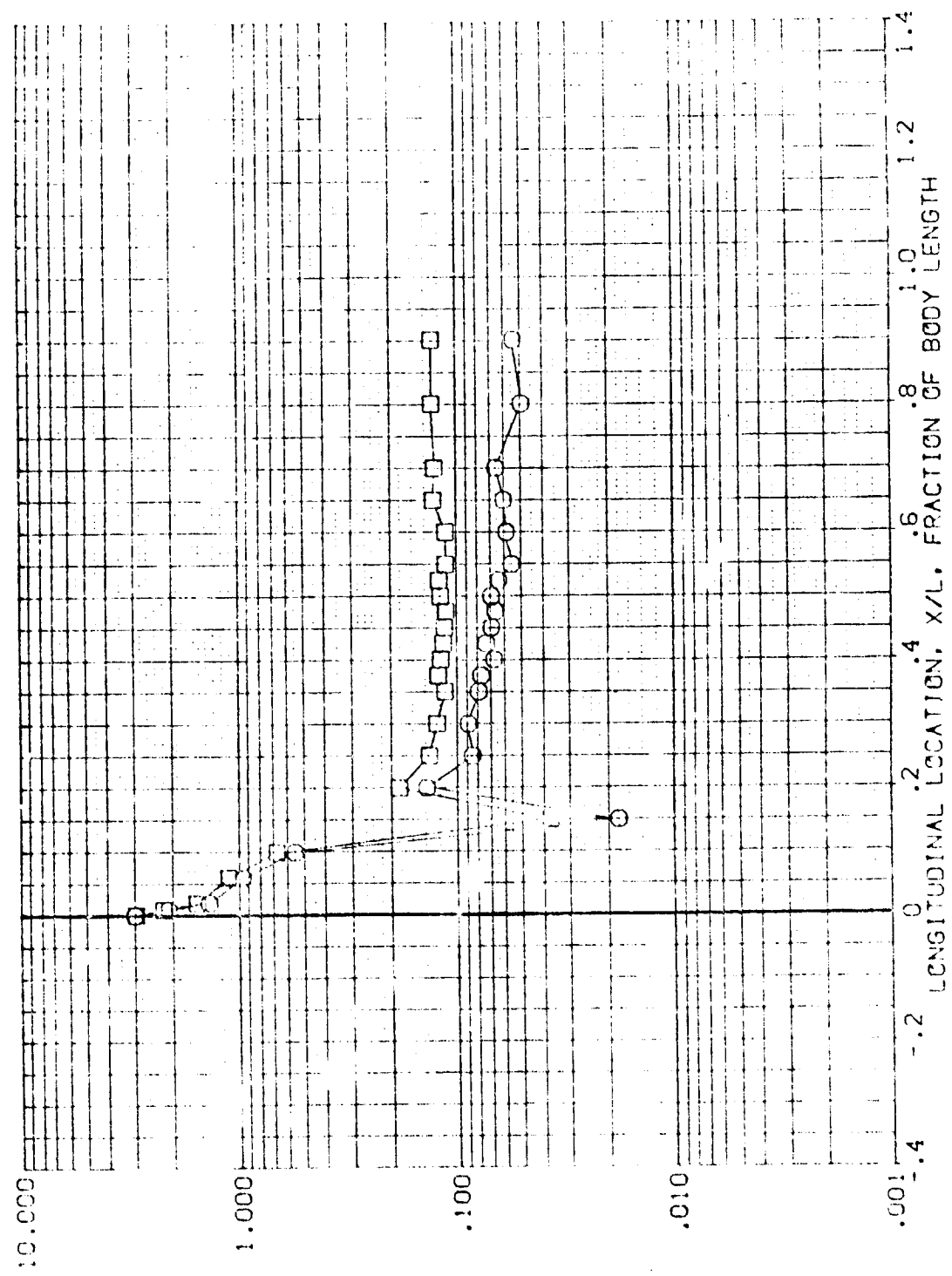


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HTE = .853 PHI = 180.000



DATA SET SYMBOL: 8
 (RIGHT) 19
 (LEFT) 19

CONFIGURATION DESCRIPTION:
 EXTERNAL TANK
 EXTERNAL TANK

BETA: .000
 ALPHA: .000
 MACH: 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

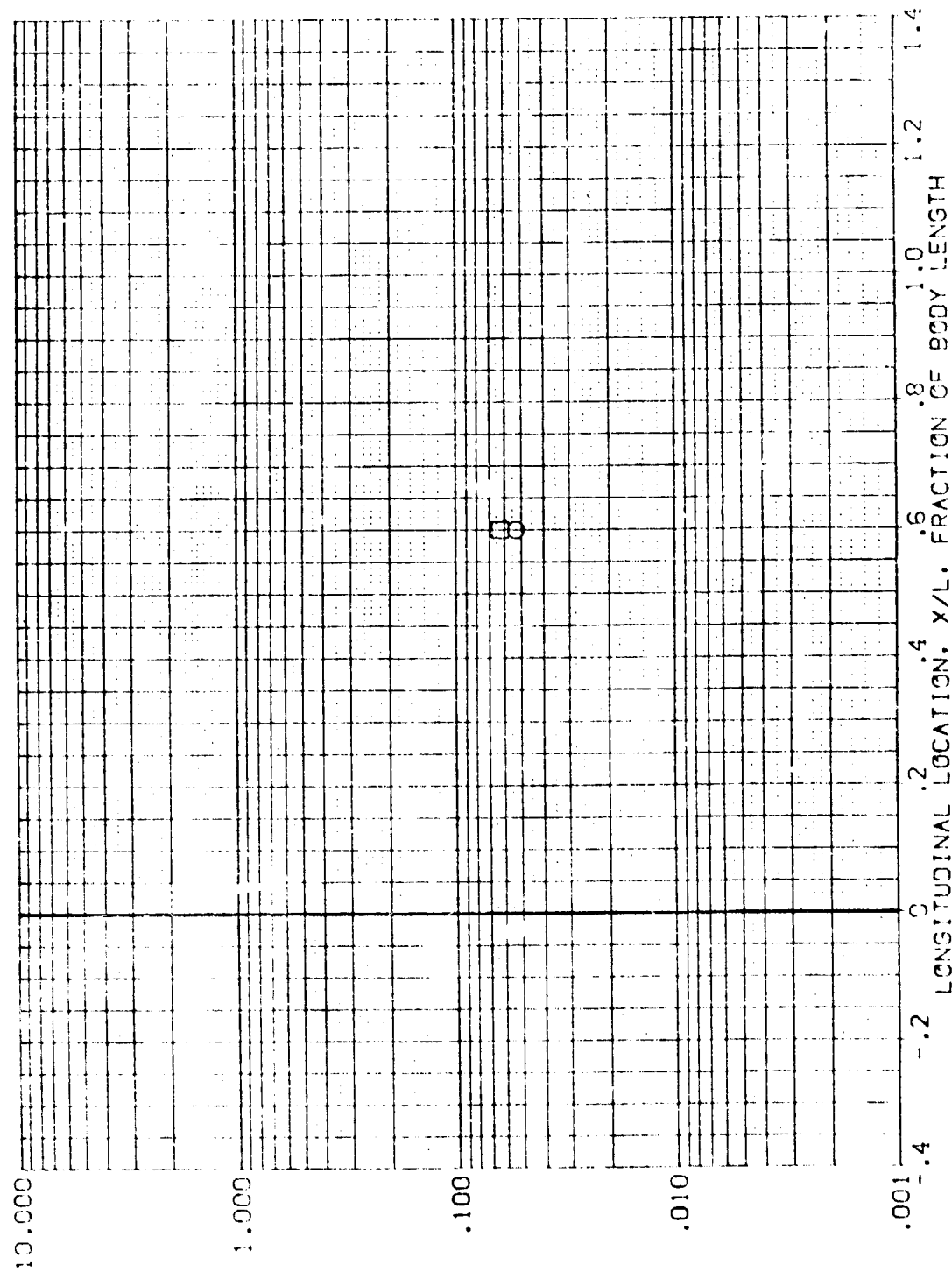


FIG 14 ET ALONE - NO TRIPS

Re/L = 4.569 HAW/HT = 1.000 PHI = 67.500

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(RIGHTS)	PHI8 TB	.000	.000	3.000
(RIGHTS)	PHI8 TB	.000	-5.000	6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

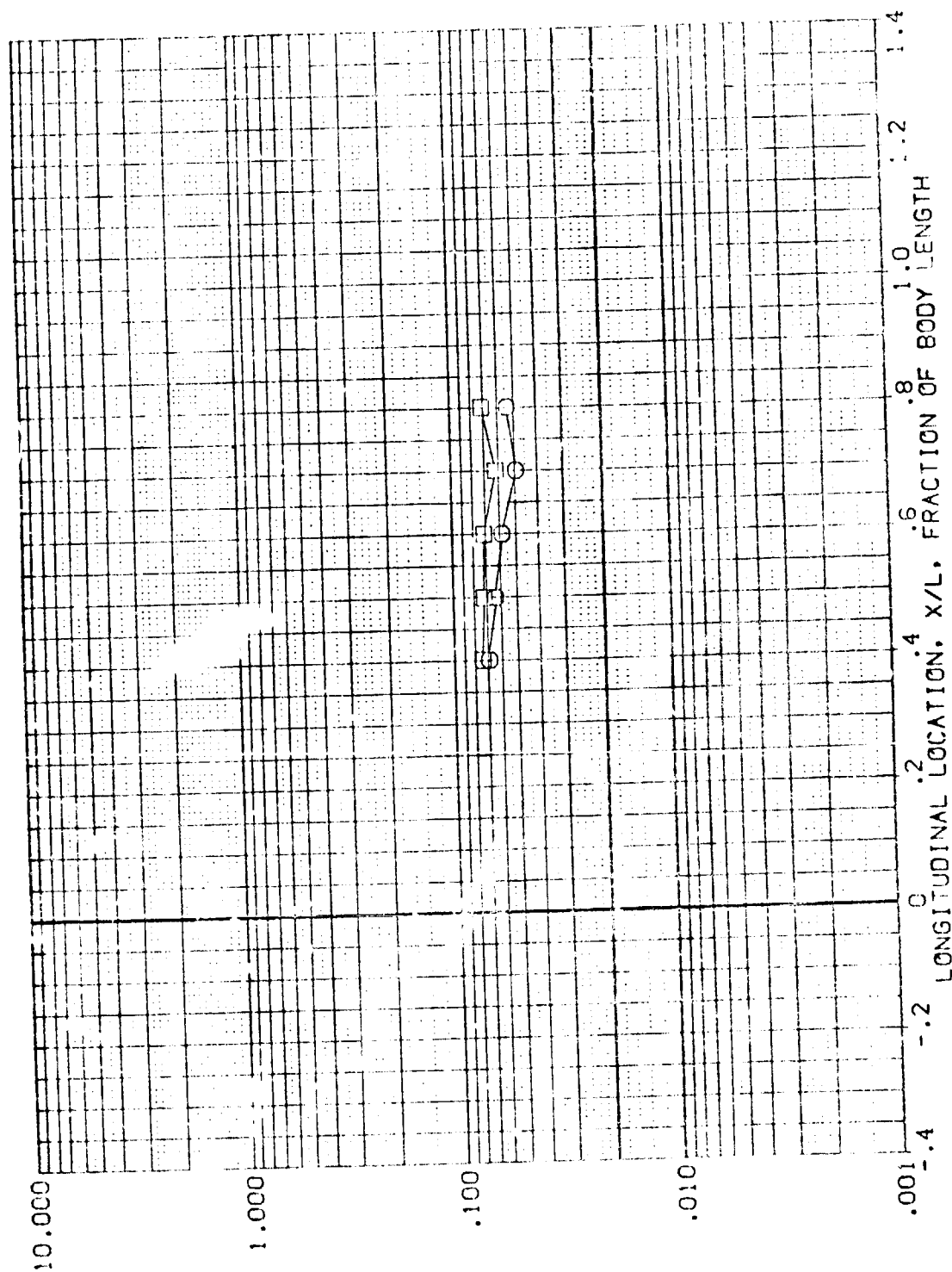


FIG 14 ET ALONE - NO TRIPS

$Re/L = 4.559$ $h_{AW}/h_T = 1.000$ $PHI = 90.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT16) IM18 T8
 (R0HT15) IM18 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

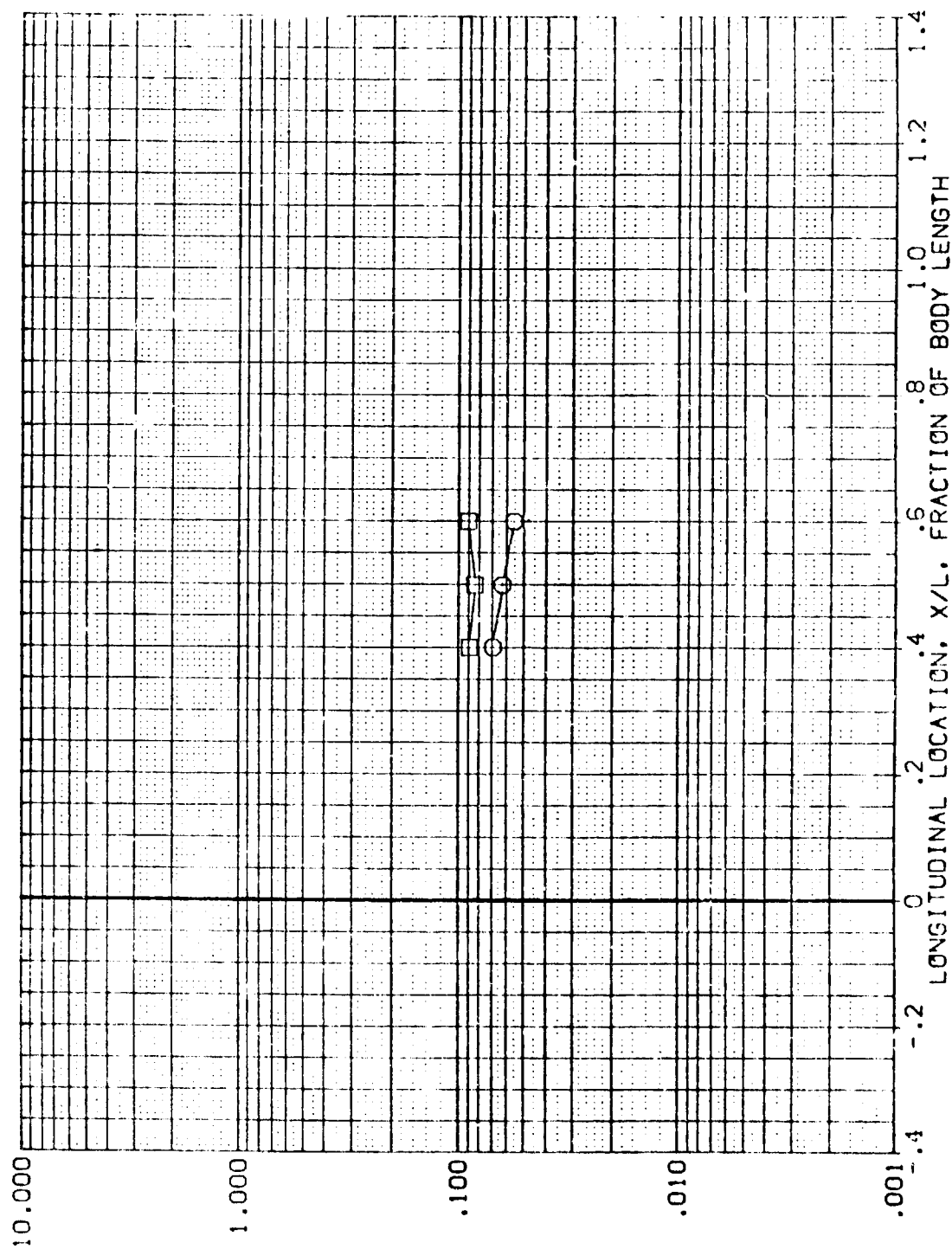


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 PHI = 112.500

DATA SET SYMBOL: (R0MT16) (R0MT15) 8
 CONFIGURATION DESCRIPTION: IHI8 TB IHI8 TB

BETA: .000 .000
 ALPHA: .000 .000
 MACH: 6.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

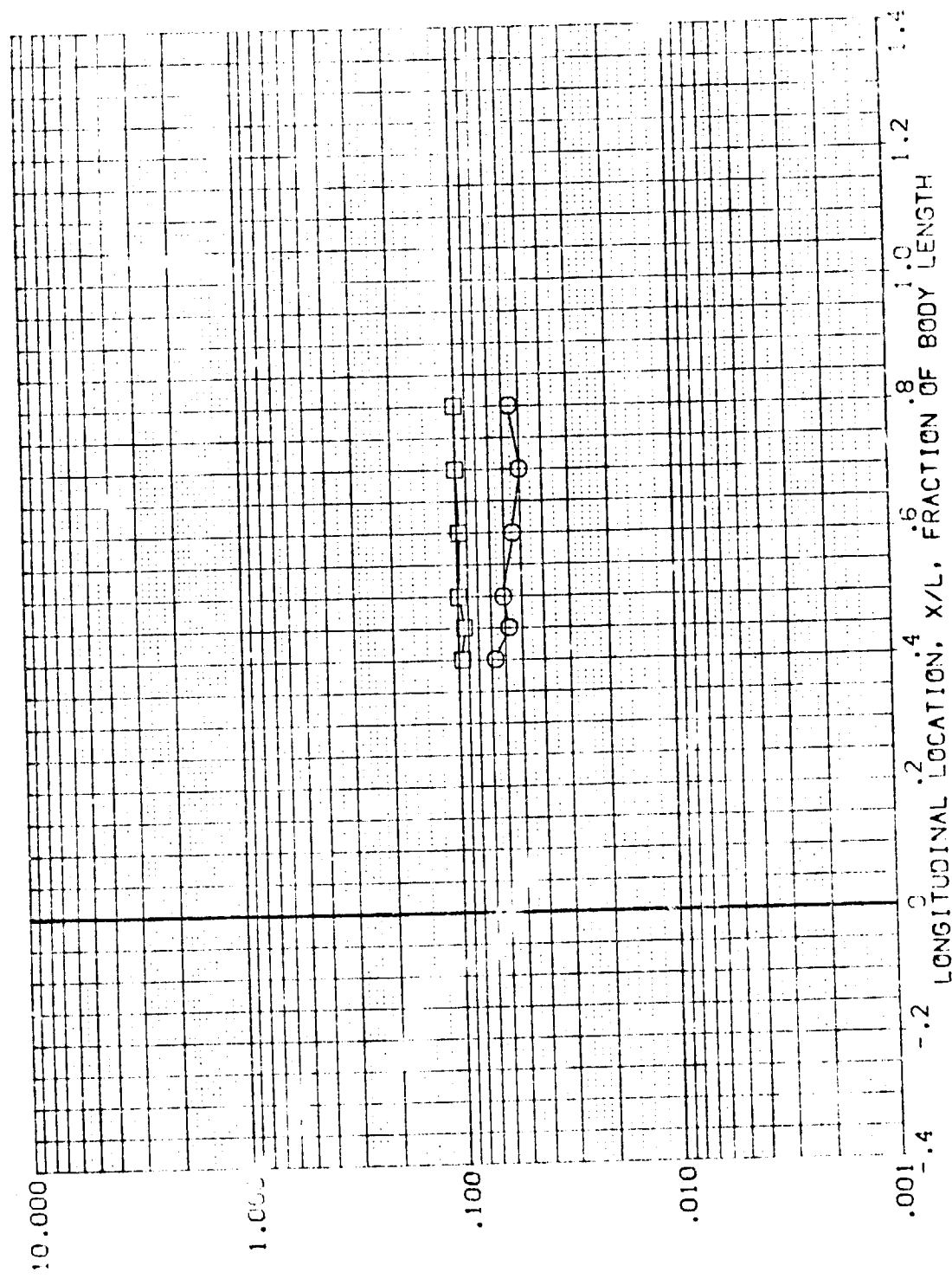


FIG. 14 ET ALONE - NO TRIPS

$RN/L = 4.569$ $HAU/HT = 1.000$ $PHI = 135.000$

DATA SET SYMBOL
(RMT:6)
(RMT:5)

CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

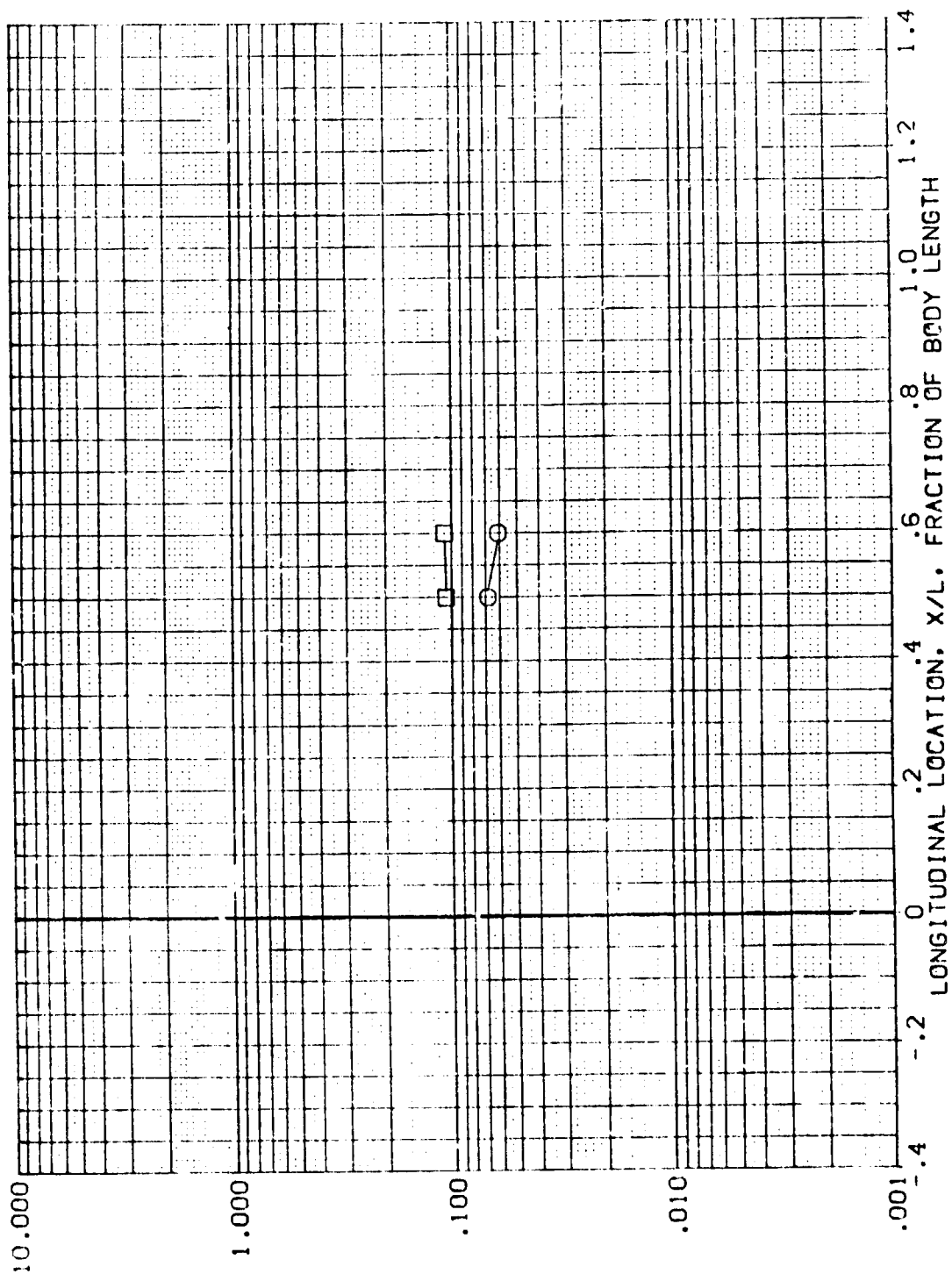


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 $h_{AW}/HT = 1.000$ PHI = 157.500

DATA SET SYMBOL
(R0MT16)
(R0MT15)

CONFIGURATION DESCRIPTION
[H18] 78
[M18] 78

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

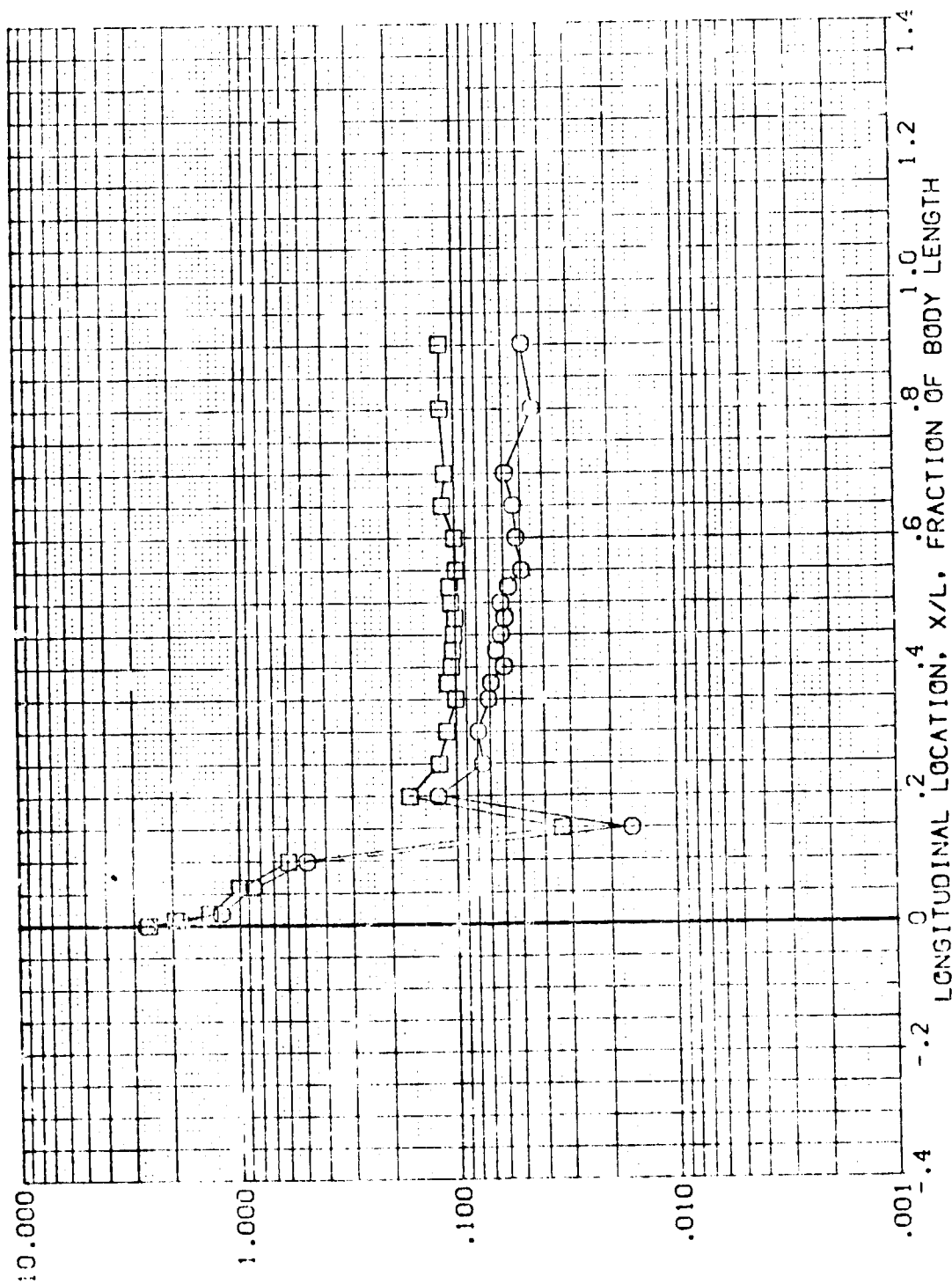


FIG 14 ET ALONE - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 PHI = 180.000

IH18 T8 X26

EXTERNAL TANK (RQNT13)

SYMBOL

PIII

HAW/HIT

RN/L

67.500
90.000
112.500
135.000
157.500
180.000

4.817

PARAMETRIC VALUES

ALPHA
MACH

.000
6.000

BETA
X-HY

.000
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

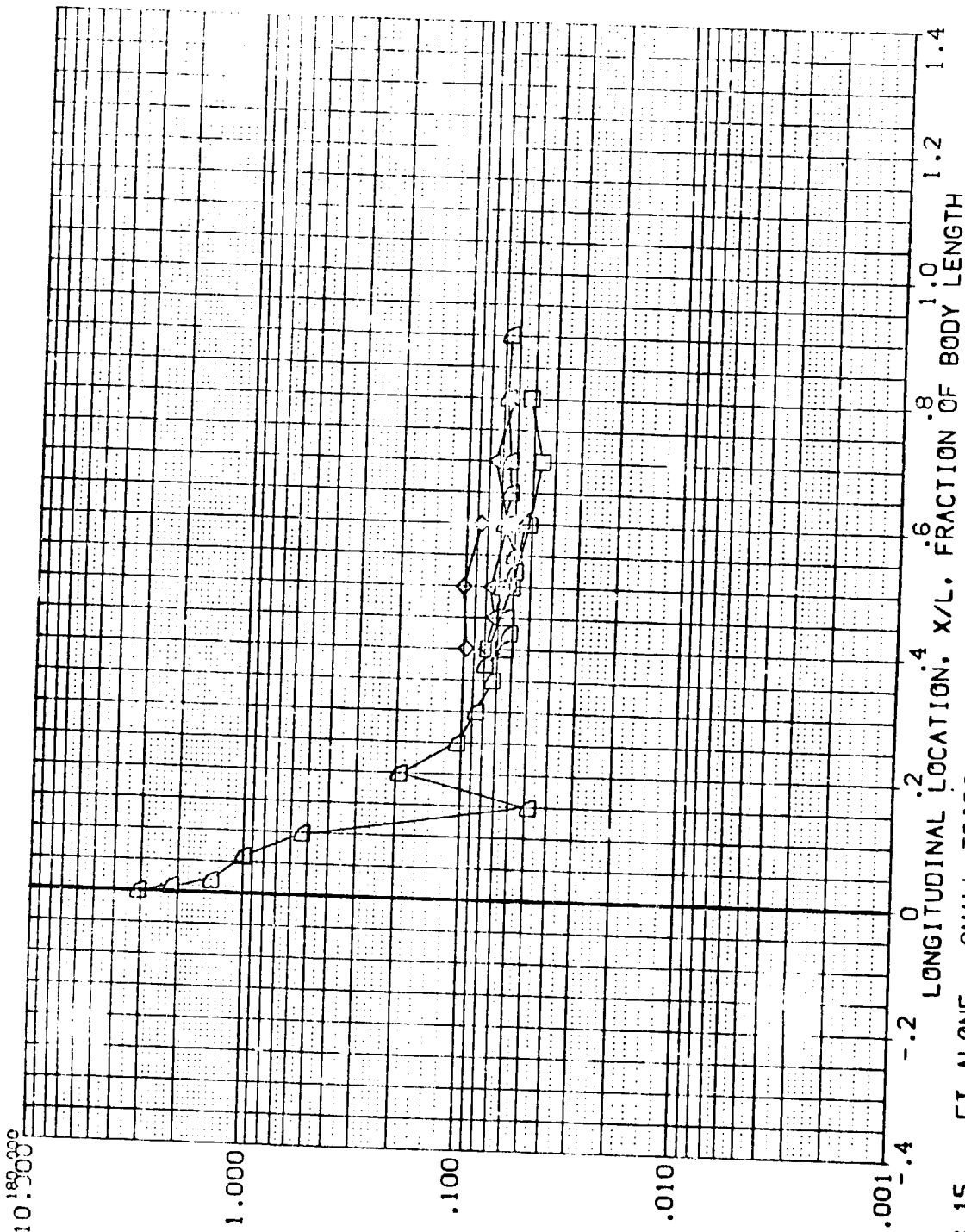


FIG 15 ET ALONE - SMALL TRIPS

EXTERNAL TANK (RQMT13)

IH18 T8 X26

SYMBOL	PHI	HAY/HT	RV/L	PARAMETRIC VALUES	
				ALPHA	BETA
□	67.500	.900	4.817	.000	.000
◇	90.000			.000	.031
▽	112.500				
△	135.000				
▽	157.500				
◇	180.000				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

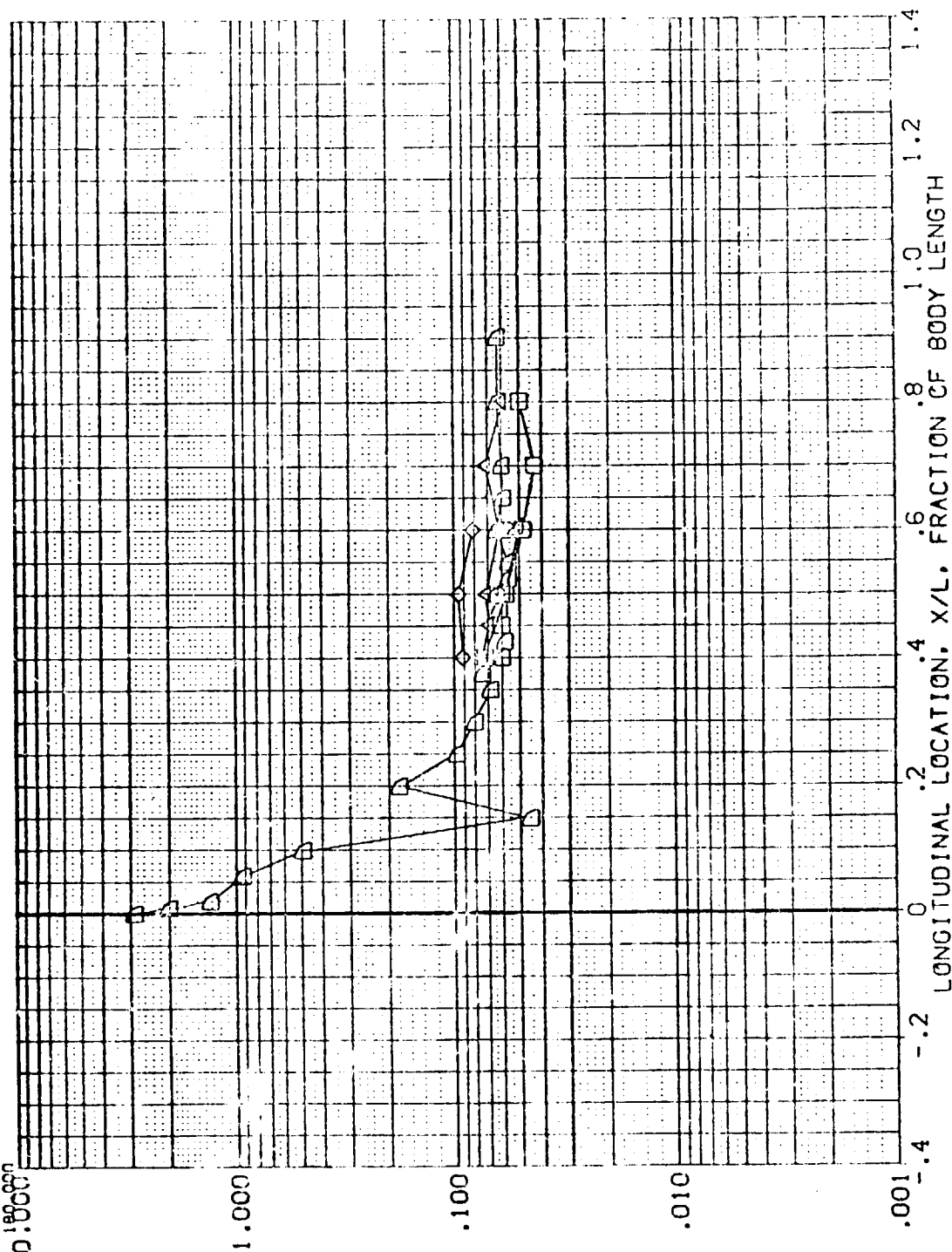


FIG 15 ET ALONE - SMALL TRIPS

1118 18 X26

EXTERNAL TANK (RQMT13)

SYMBOL
 □
 ◇
 △
 ▽
 ○

QHI
 67,500
 90,000
 112,500
 135,000
 157,500
 180,000

HAW/HT
 1.000

RN/L
 4.817

PARAMETRIC VALUES
 ALPHA
 MACH
 .000
 6.000
 BE'A
 X-HT
 .000
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

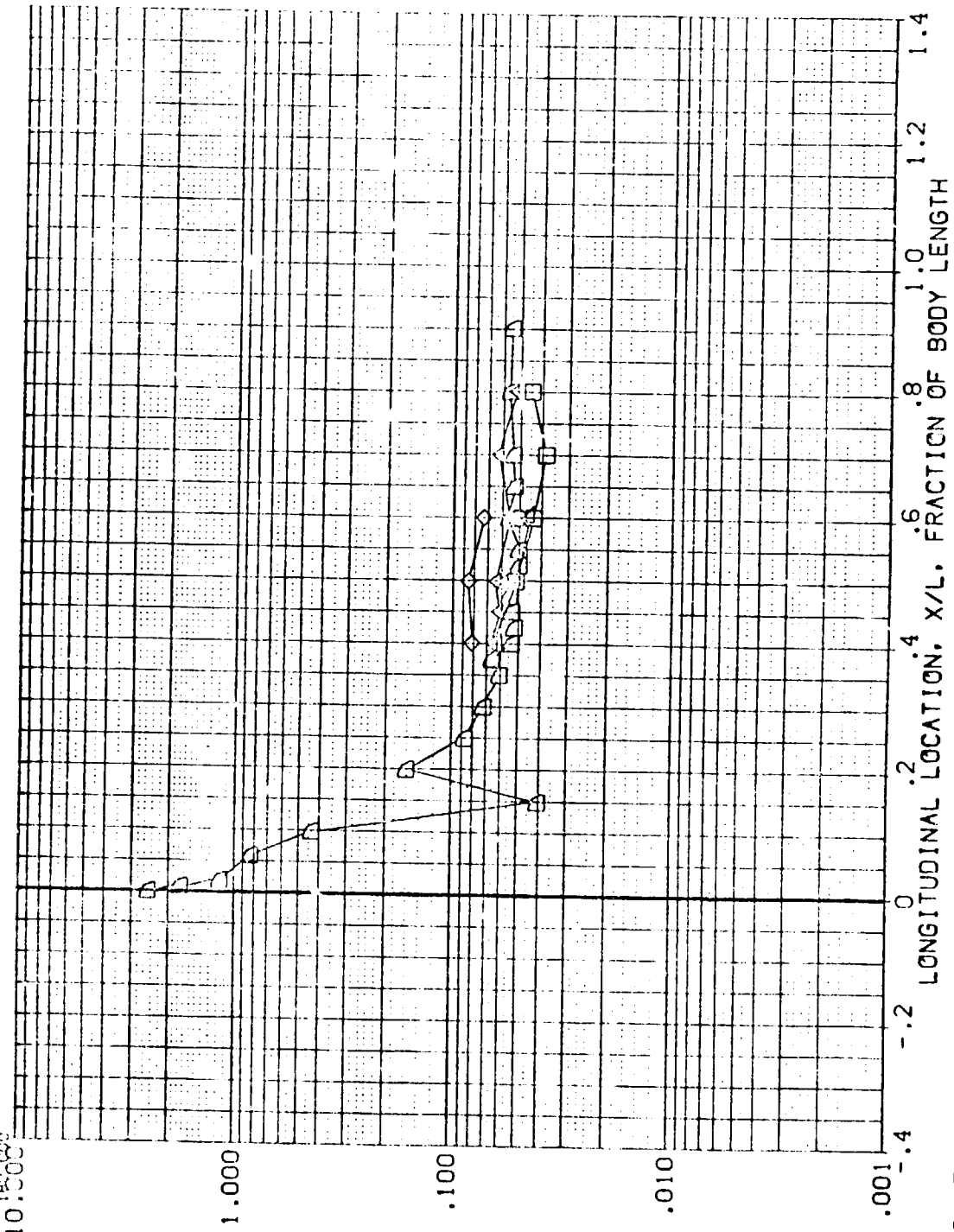


FIG 15 ET ALONE - SMALL TRIPS

EXTERNAL TANK (RQMT14)

PH18 T8 X26

PARAMETRIC VALUES
ALPHA 5.000 BETA 1.000
MACH 5.000 X-INT 1.000

SYMBOL PHI HAW/HT RN/L
67.500 1.850 4.717
90.000
112.500
135.000
157.500
180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

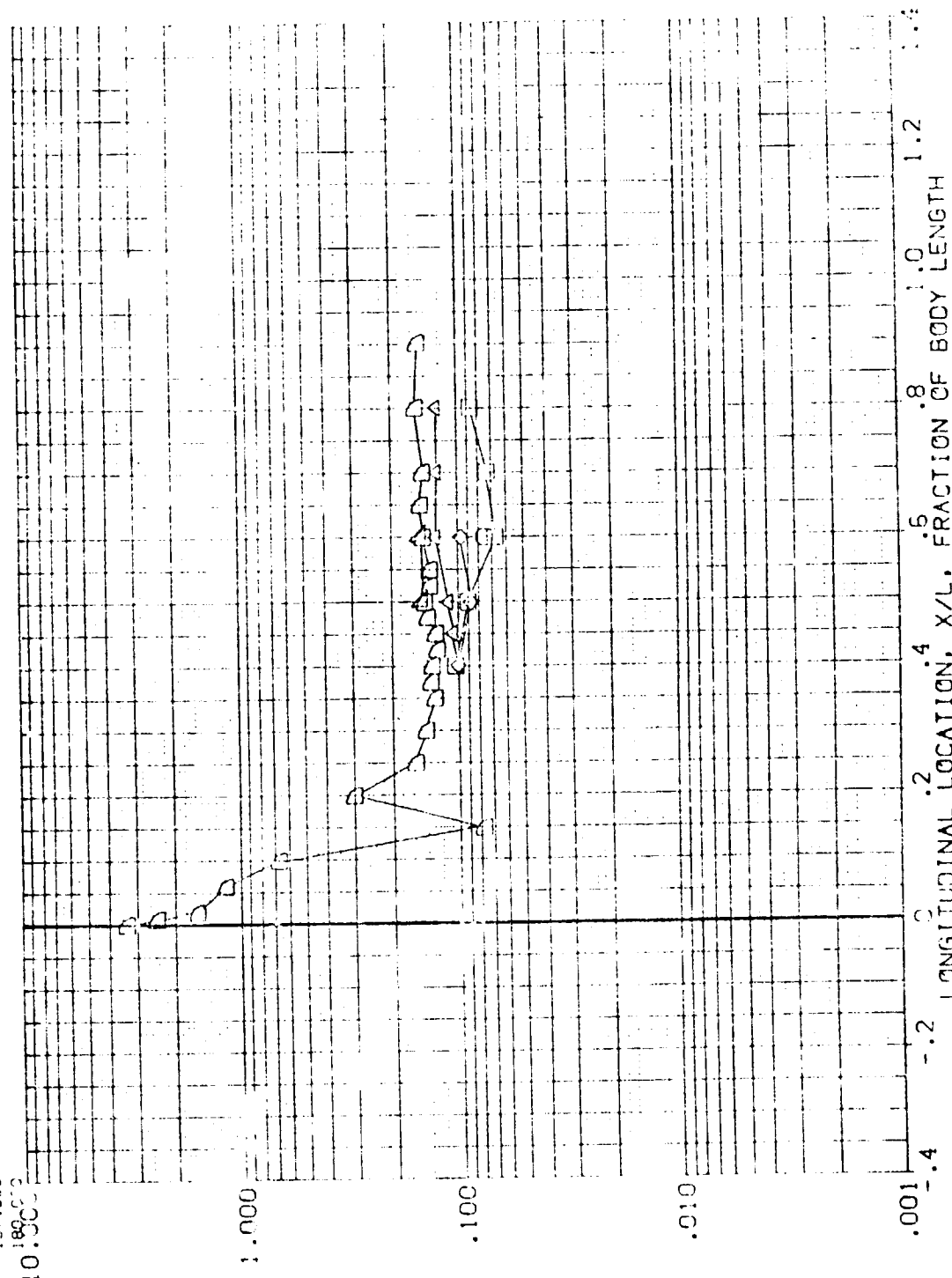


FIG 15 ET ALONE - SMALL TRIPS

IH18 18 X26

SYMBOL P₀₁ HAW/HT RN/L
 67.500
 90.000 4.717
 112.500
 135.000
 157.500
 180.000

EXTERNAL TANK (RQMT14)

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA X-HT
 .000
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

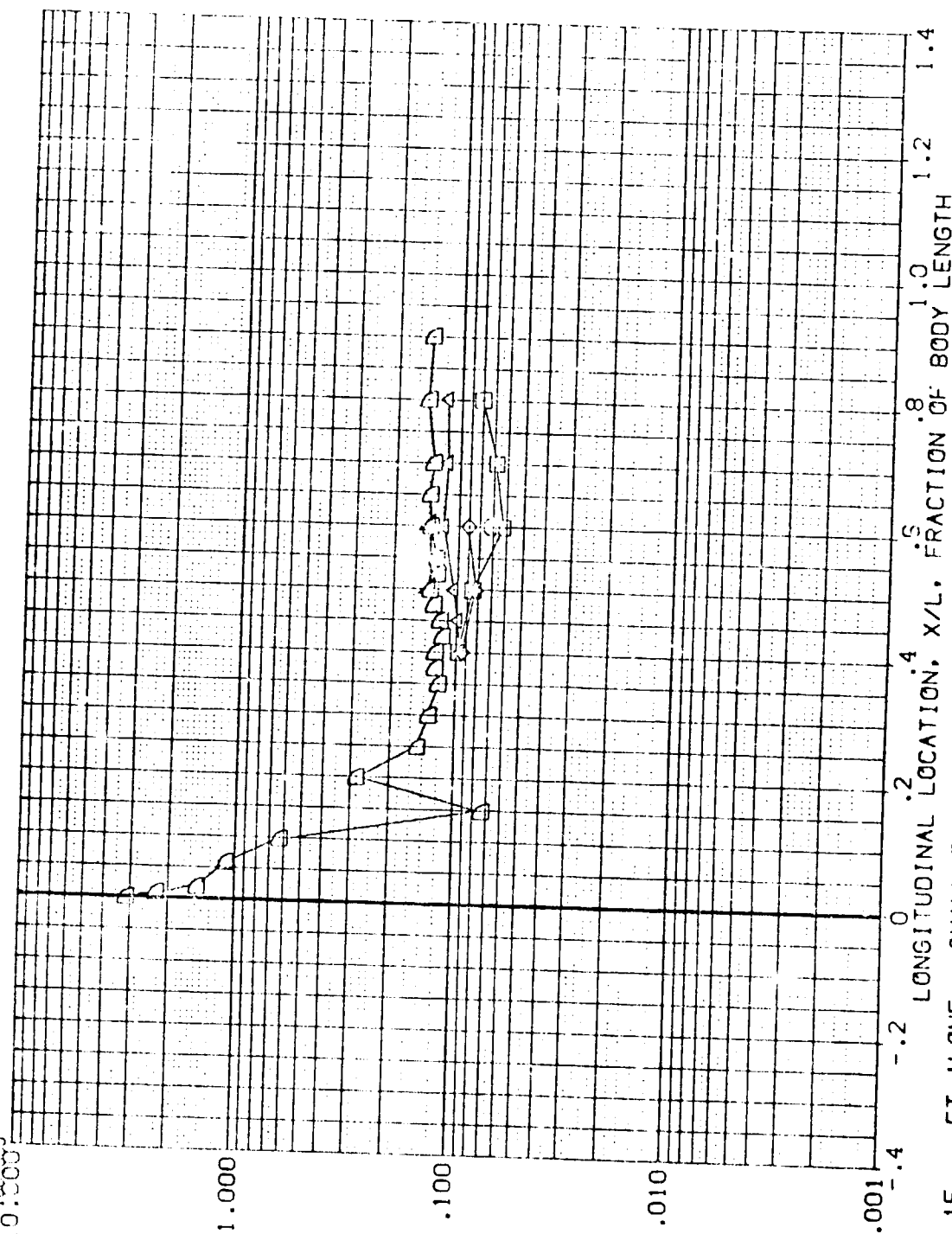


FIG 15 ET ALONE - SMALL TRIPS

PH18 T8 X26

EXTERNAL TANK (RQMT14)

PARAMETRIC VALUES
ALPHA -5.000 BETA .000
MACH 6.000 X-H/T .001

SYMBOL PHI HAW/HV RN/L
67.500 1.000 4.717
90.000
112.500
135.000
157.500
180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

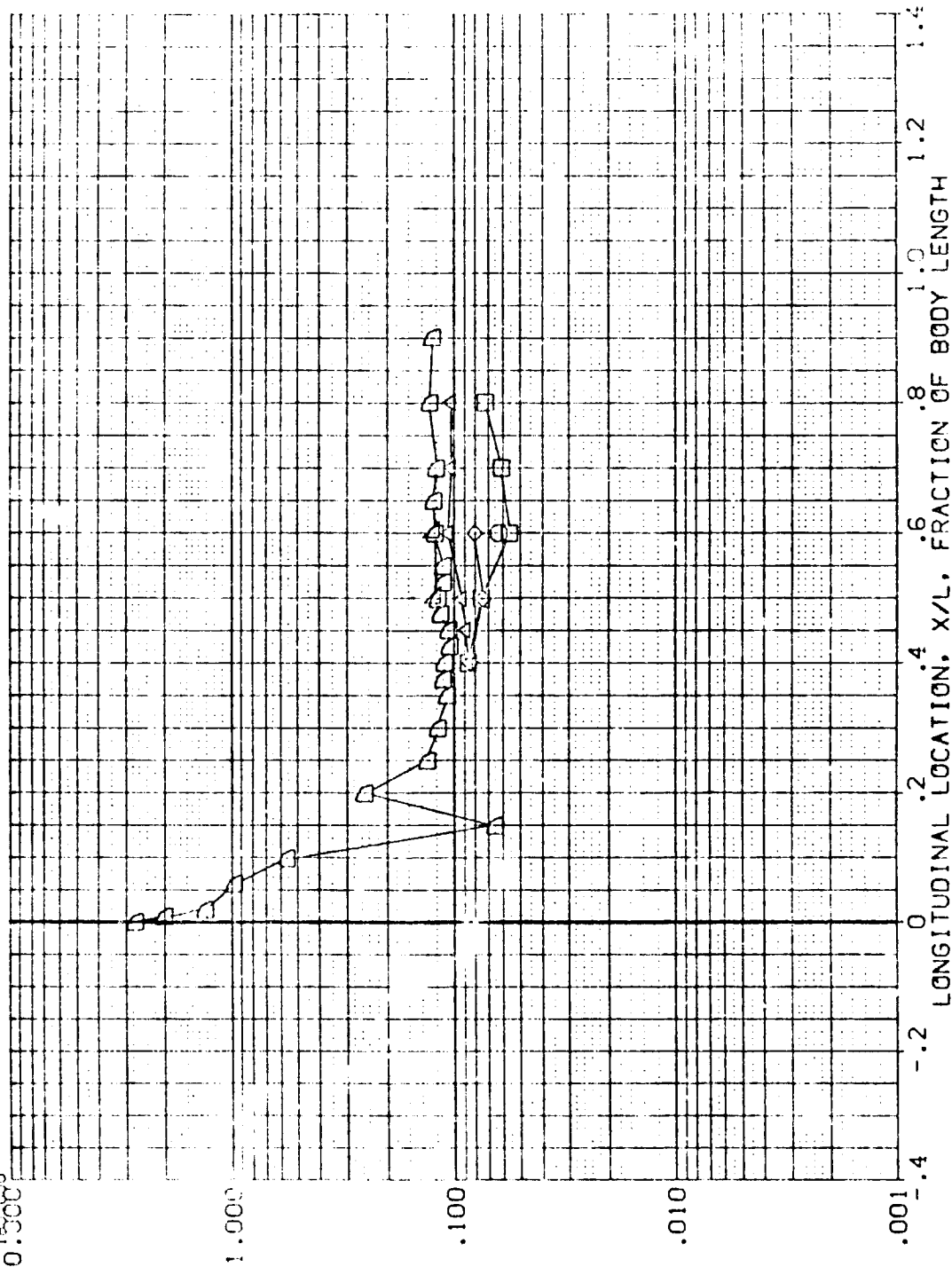



FIG 15 ET ALONE - SMALL TRIPS

DATA SET SYMBOL (R0HT13) (R0HT14) 

CONFIGURATION DESCRIPTION
IH18 TB X26
IH19 TB X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000
.000

ALPHA .000
-5.000

MACH 6.000
6.000

X-HT .031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

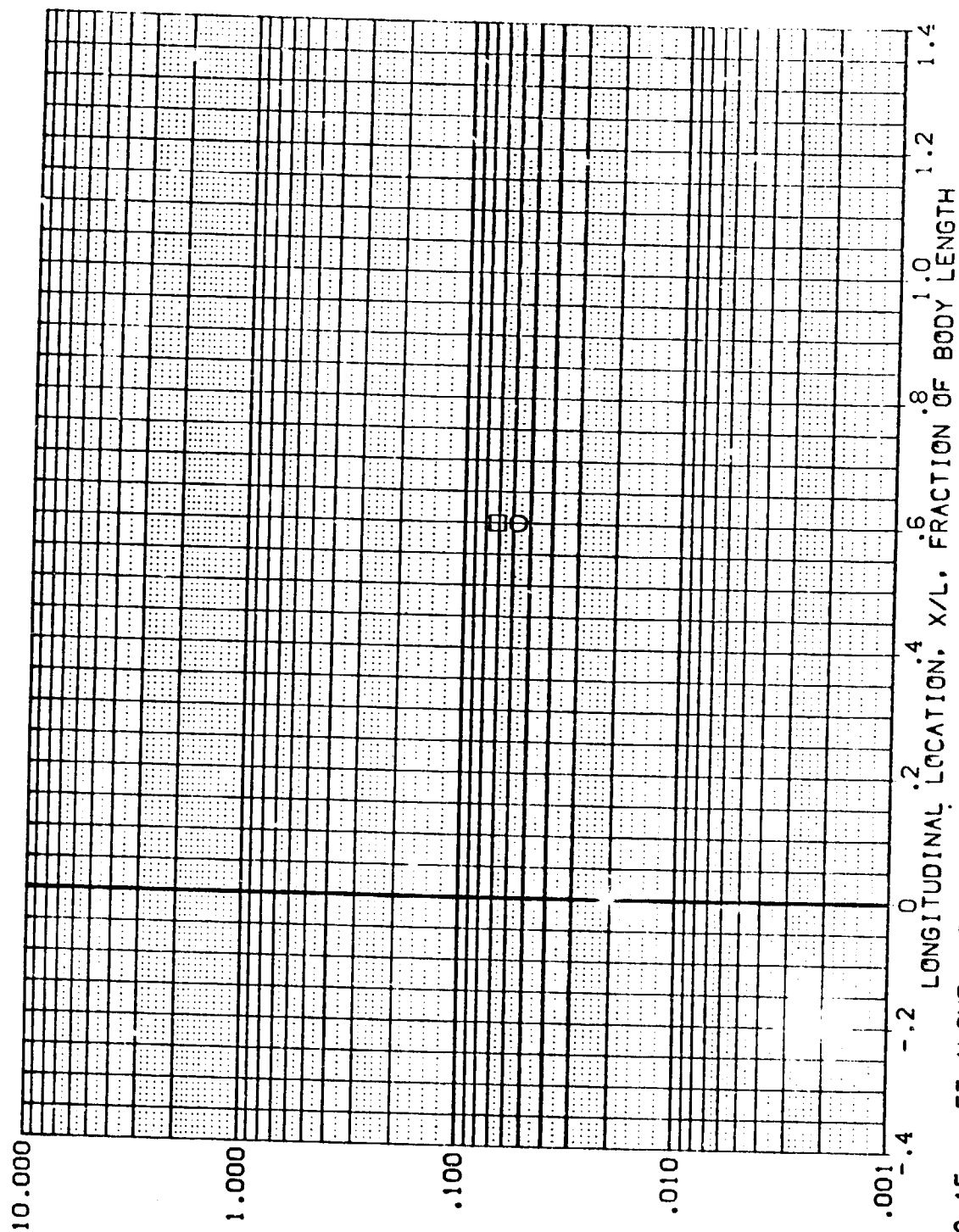


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 67.500

DATA SET SYMBOL
(R0MT13)
(R0MT14)

8

CONFIGURATION DESCRIPTION
[H18 T8 X26]
[H18 T8 X26]

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

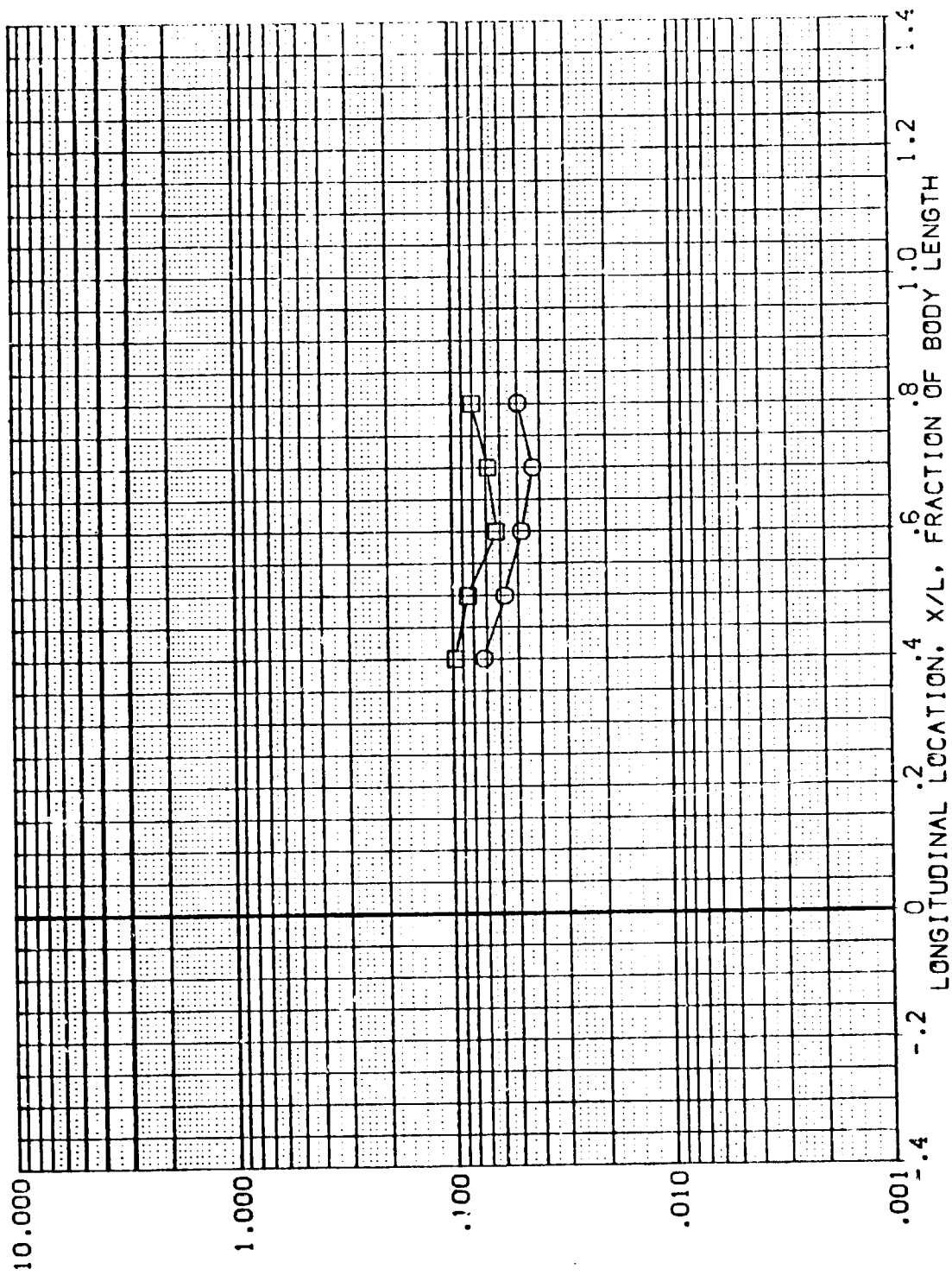


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 90.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT13) IH18 T8 X26
 (RQMT14) IH18 T8 X26

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

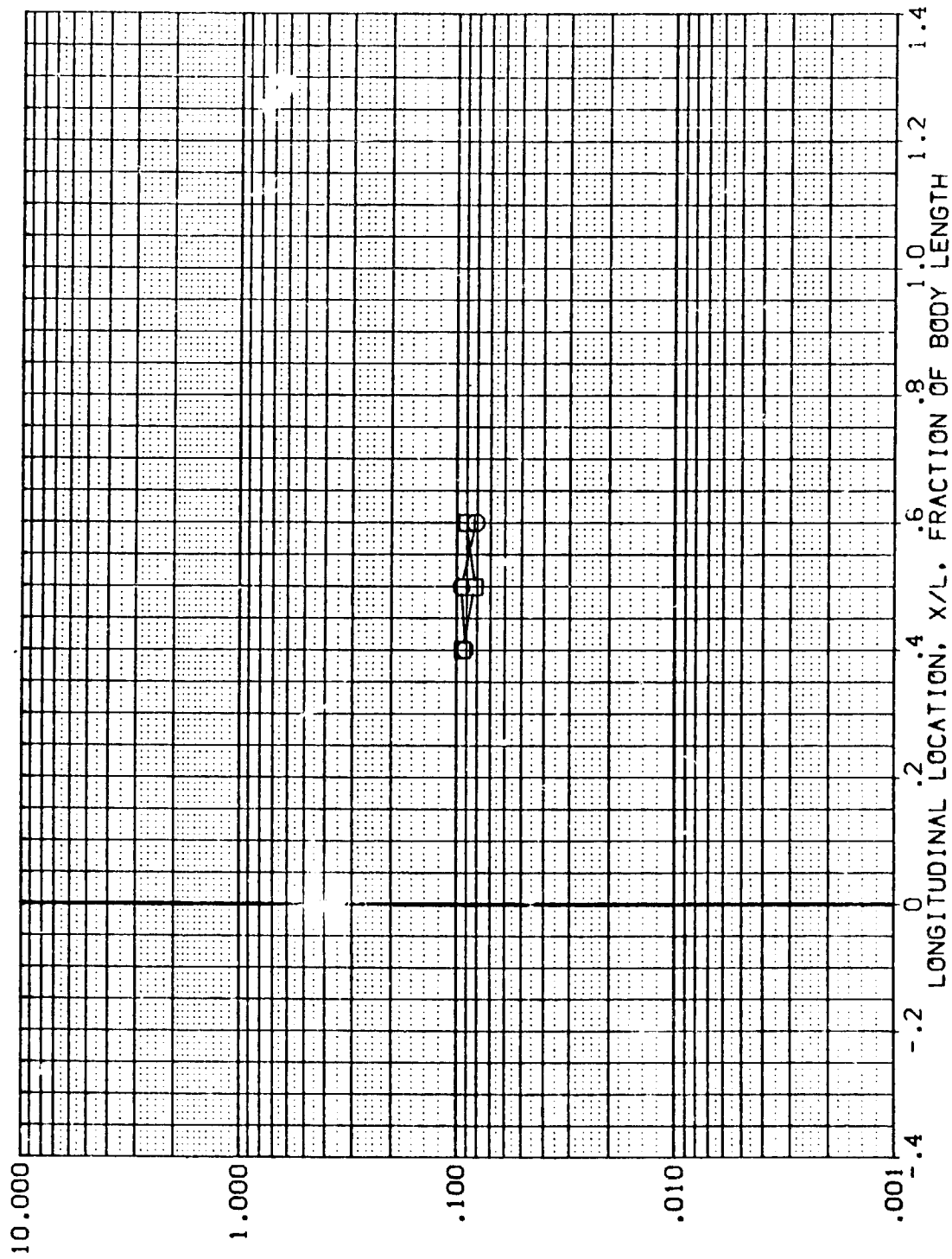


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 112.500

DATA SET SYMBOL
(RMT13)
(RMT14)

CONFIGURATION DESCRIPTION
T8 X26
T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

X-HT
.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

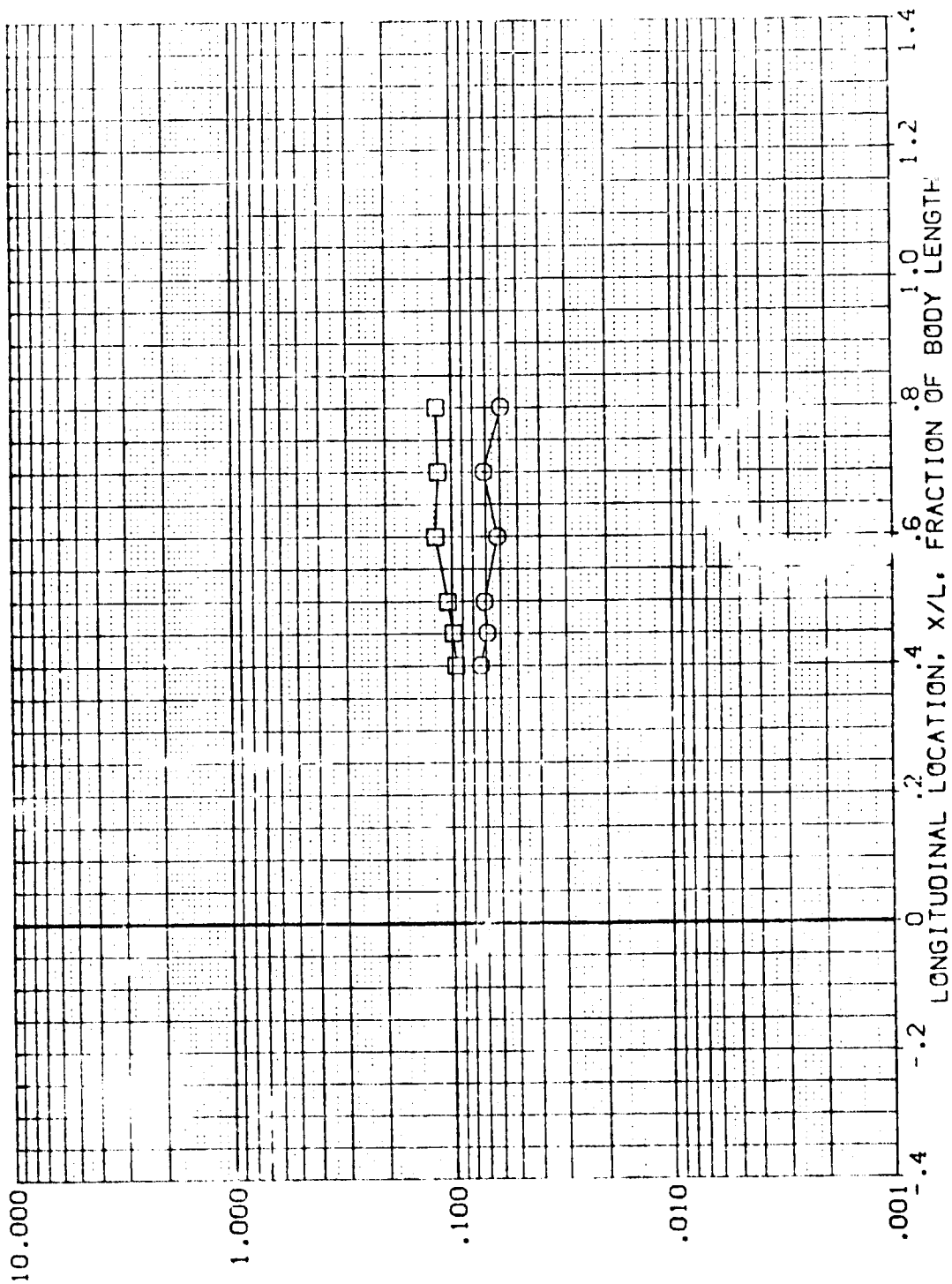


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 135.000

DATA SET SYMBOL
(R0HT13)
(R0HT14)

CONFIGURATION DESCRIPTION
T8 X26
T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

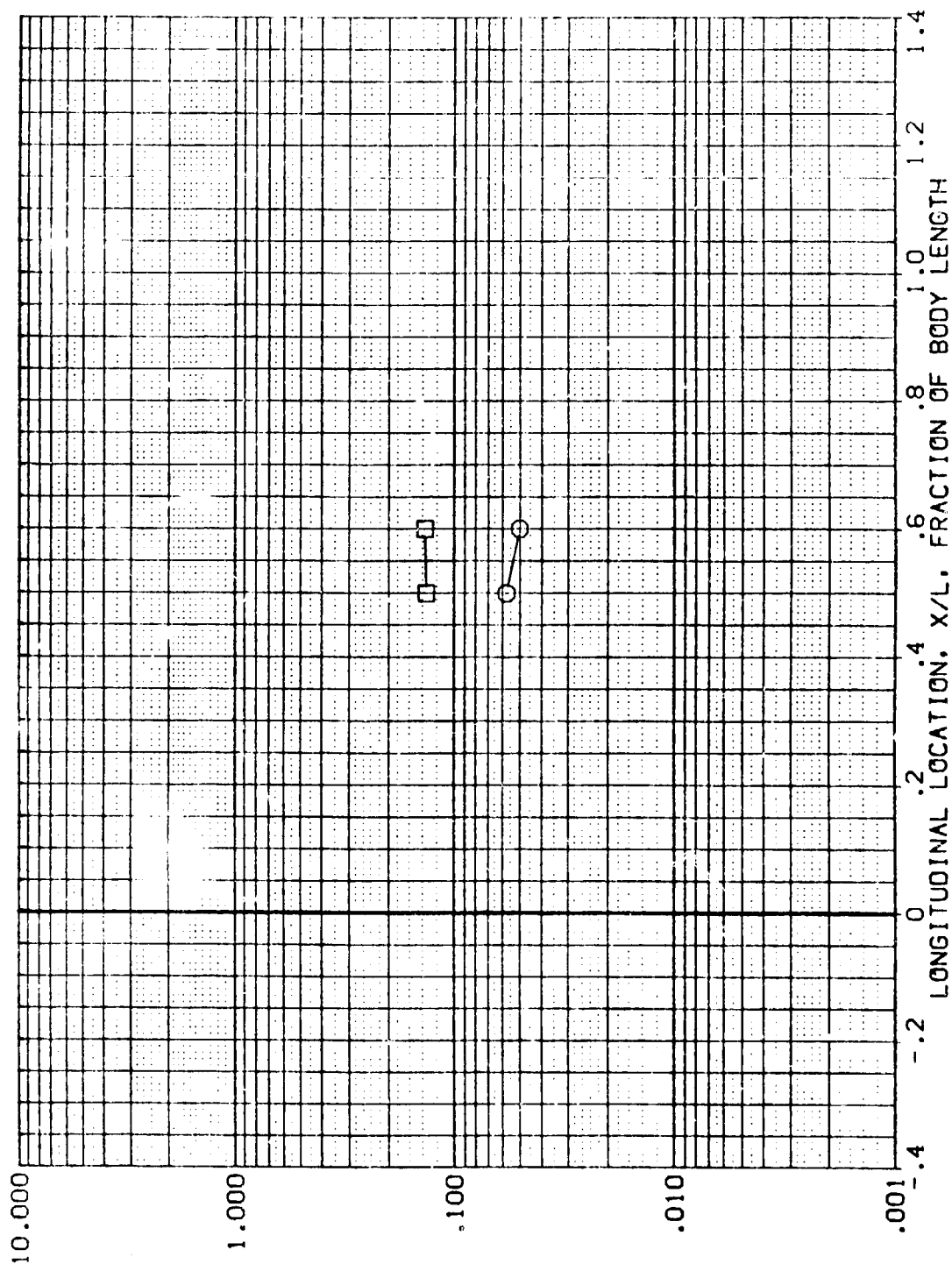


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 157.500

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(R0MT13)
(R0MT14)

CONFIGURATION DESCRIPTION
H18 T8 X26
H18 T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

X-HT
.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

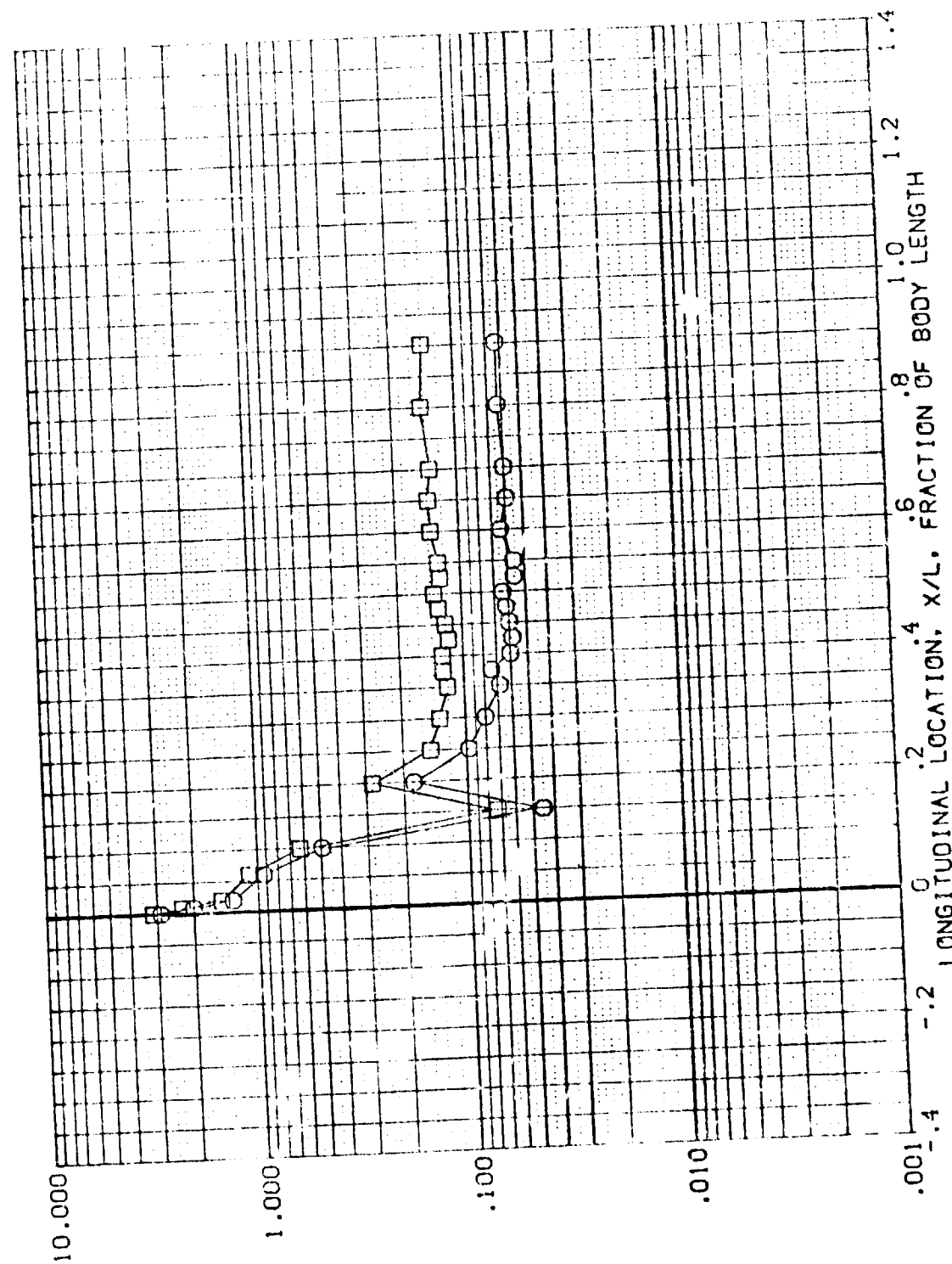


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 PHI = 180.000

DATA SET SYMBOL (POINT) 9
 CONFIGURATION DESCRIPTION (H18 T8 X26) (H18 T8 X26)
 EXTERNAL TANK EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

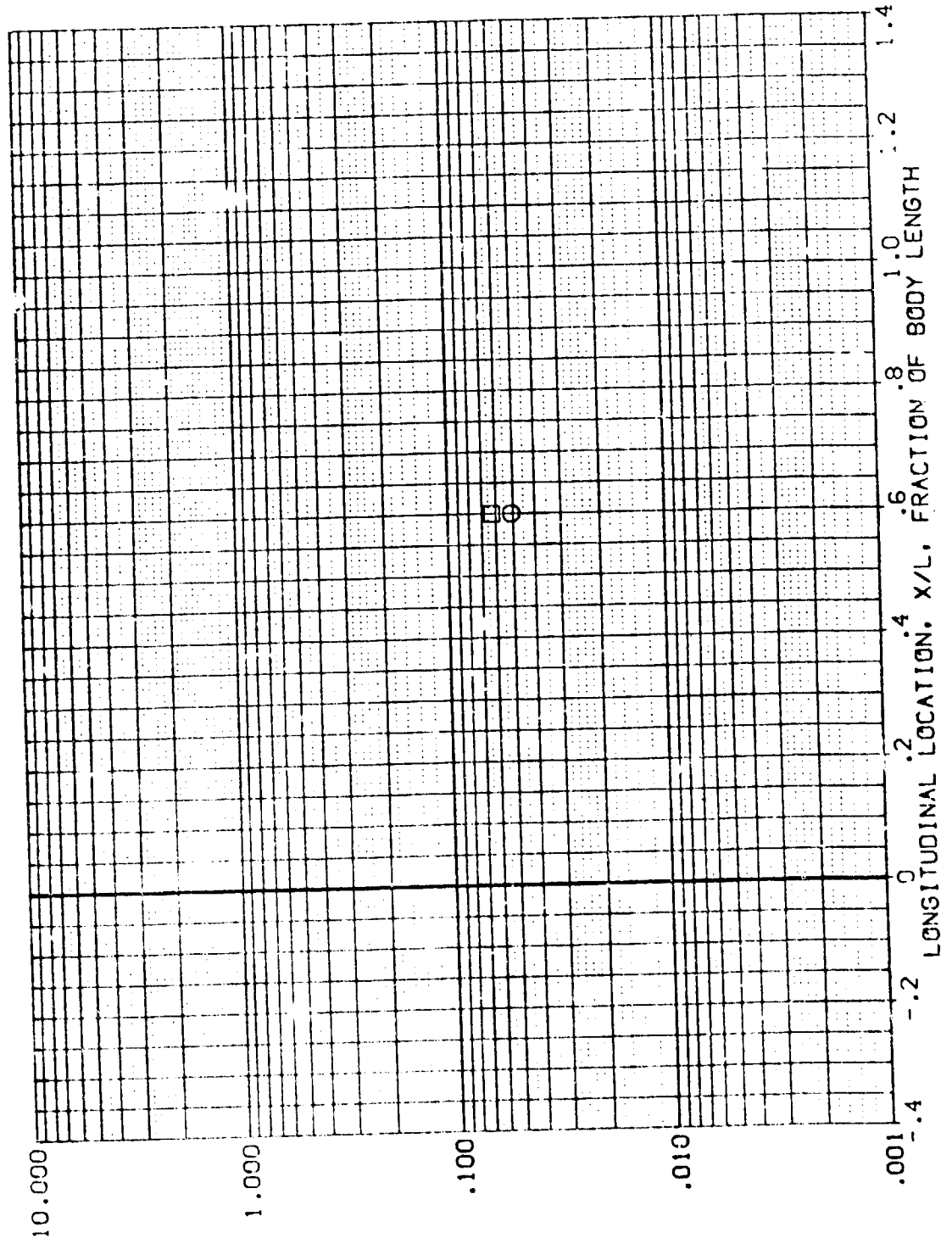


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 PHI = 67.500

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(POINT 13) H18 T8 X26
(POINT 14) H18 T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 5.000 5.000
X-HT .031 .031

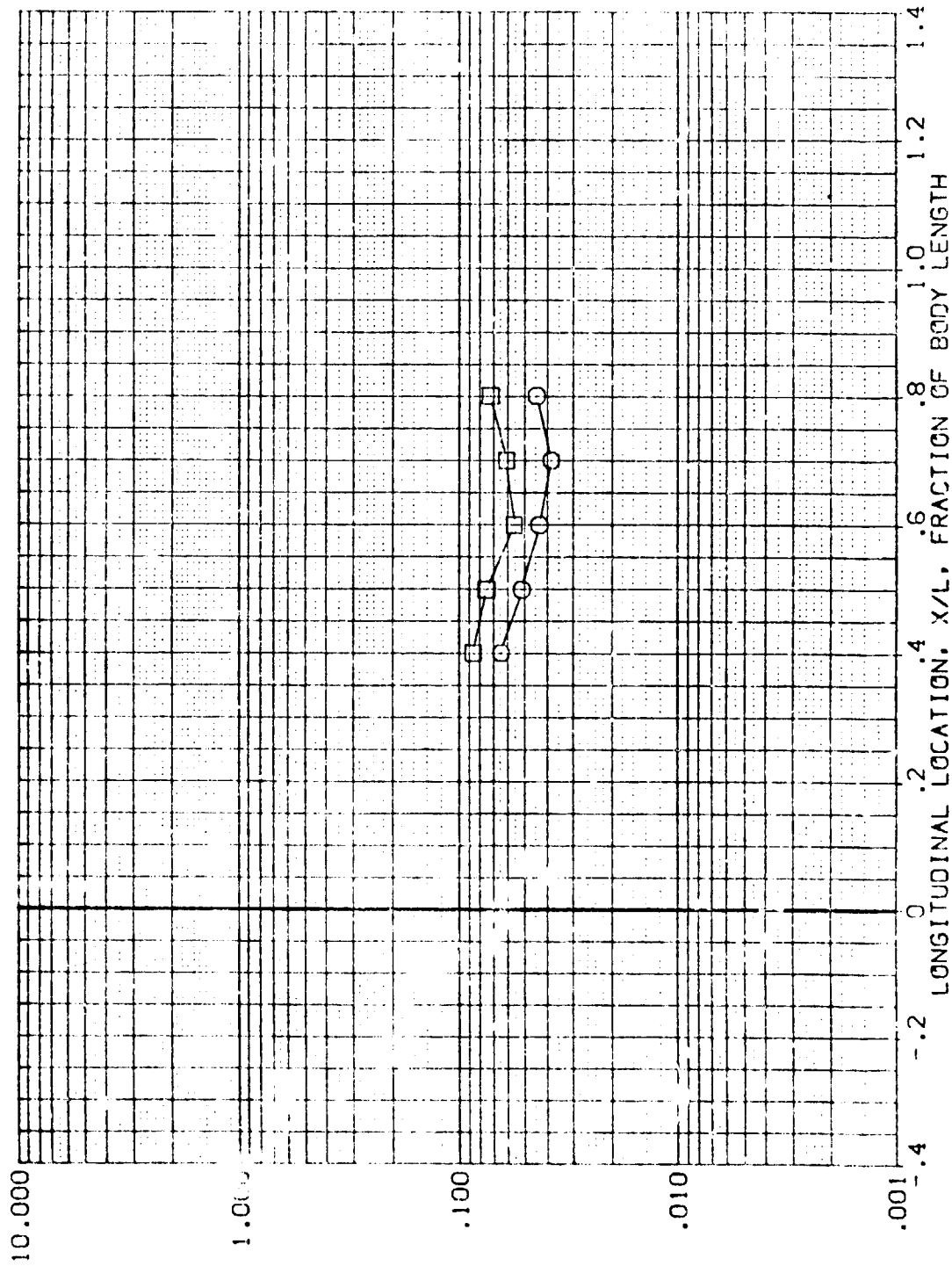


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 PHI = 90.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT13) 8 IH18 TB X26
 (RCHT14) 8 IH18 TB X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 .000
 .000
 ALPHA .000
 .000
 .000
 MACH 5.000
 5.000
 5.000
 X-HT .031
 .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

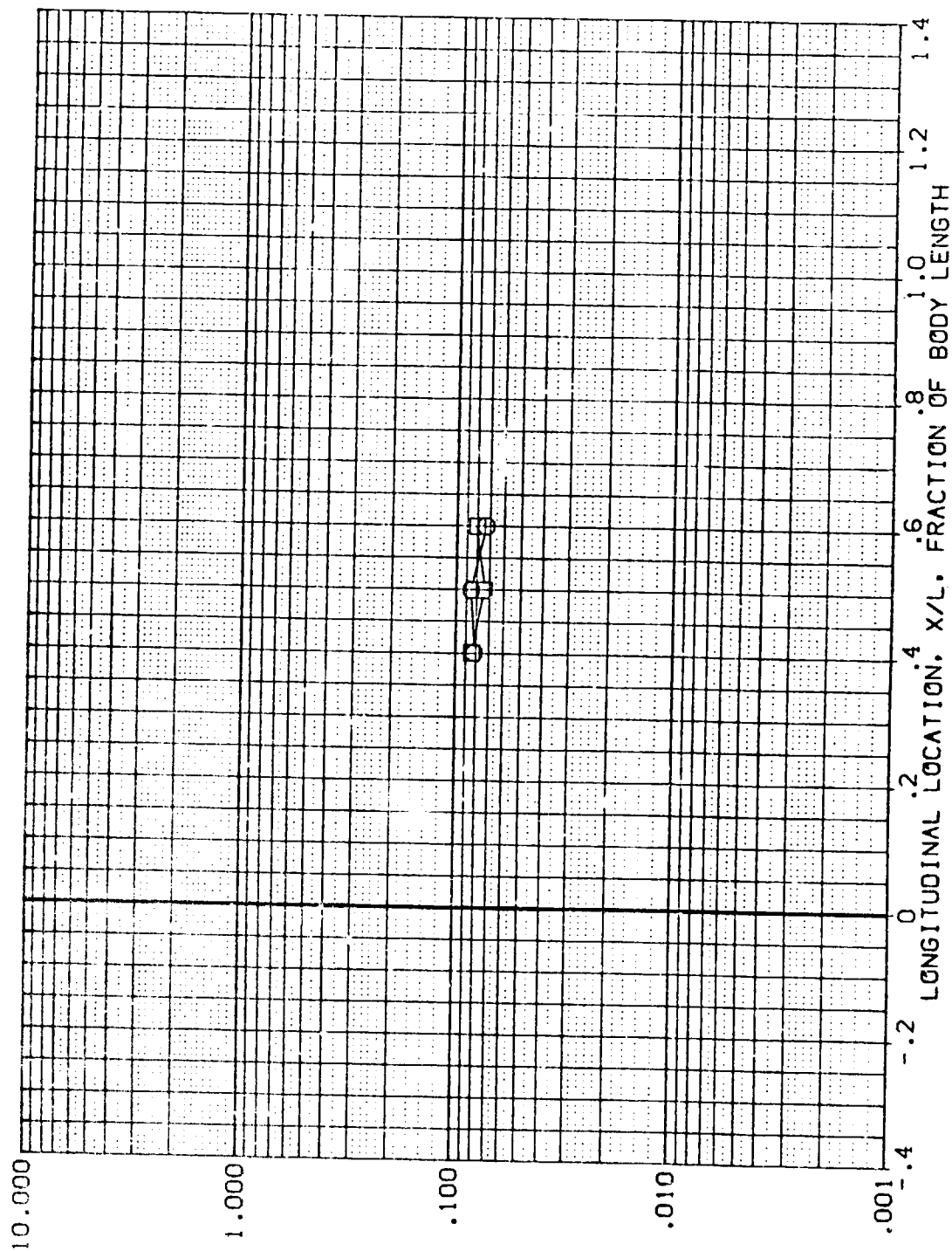


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.00 PHI = 112.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) 1H18 T8 426
 (RMT14) 1H18 T8 X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH X-HT
 .000 .000 6.00 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

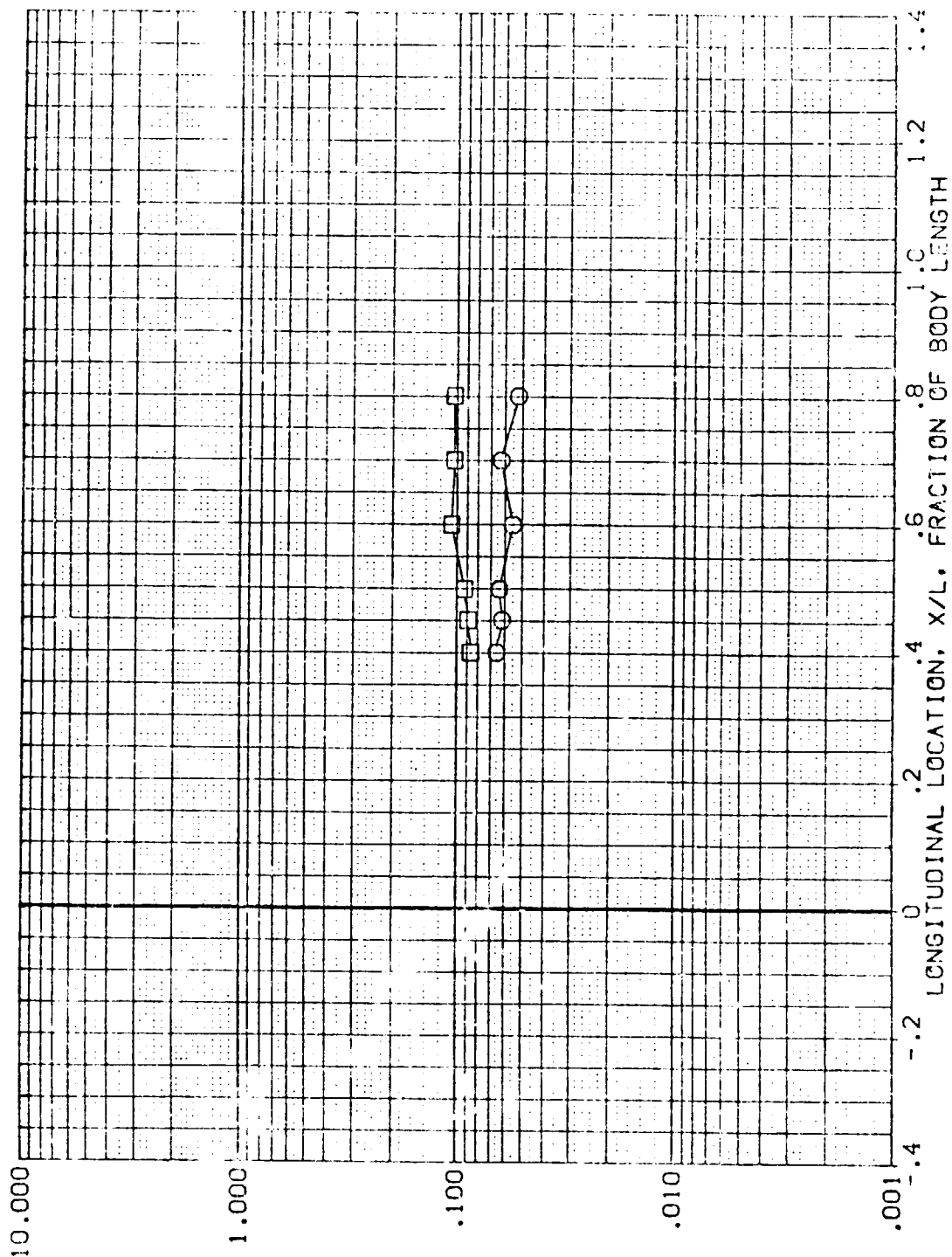


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 PHI = 135.000

DATA SET SYMBOL: 8
 (R0MT13)
 (R0MT14)

CONFIGURATION DESCRIPTION
 IHI8 T8 X26
 IHI8 T8 X26

BETA .000
 ALPHA .000
 X-HIT .031

MACH 6.000
 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

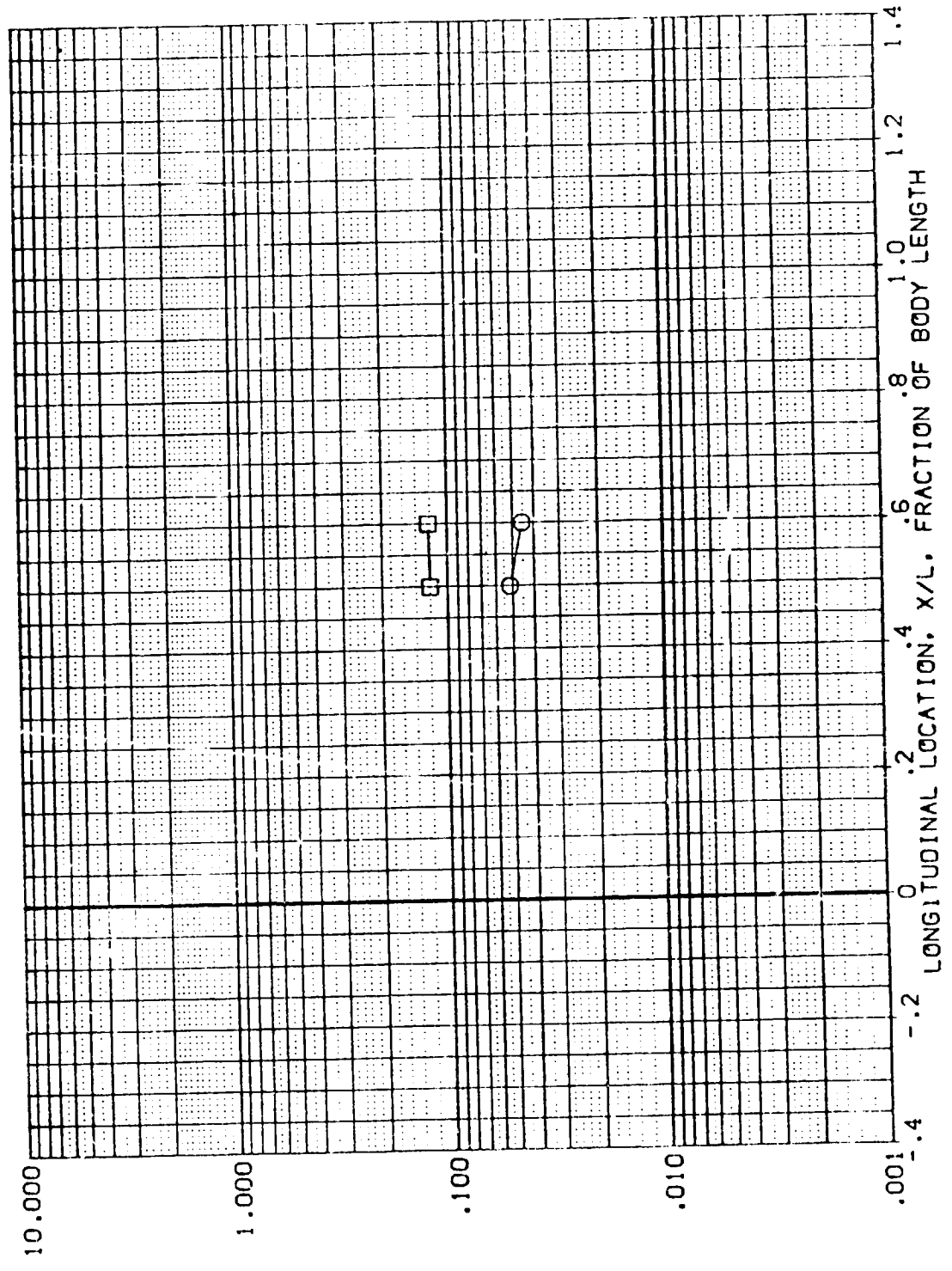


FIG 15 ET ALONE - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT13) 18 X26
 (RQMT14) 18 X26

BETA .000 .000
 ALPHA .000 -5.000
 MACH 5.000 5.000
 X-HT .031 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

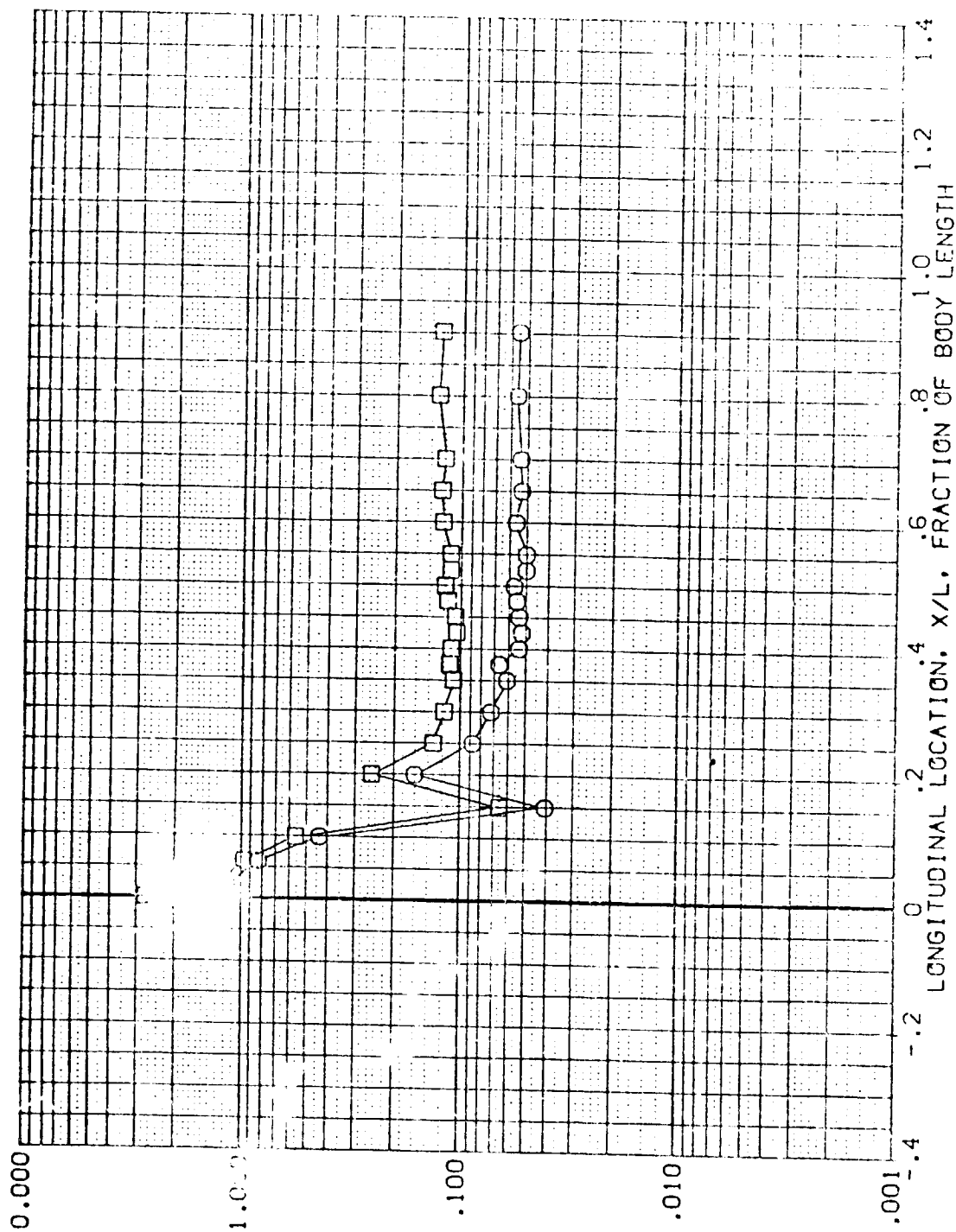


FIG 15 ET ALONE - SMALL TRIPS

$RN/L = 4.817$ $HAW/HT = 1.000$ $PHI = 180.000$

1H13 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT02)

PARAMETRIC VALUES
 ALPHA .000
 BETA 6.000
 DELTAH .000
 MACH .175

MAW/HT .850
 RN/L 4.807

SYMBOL
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

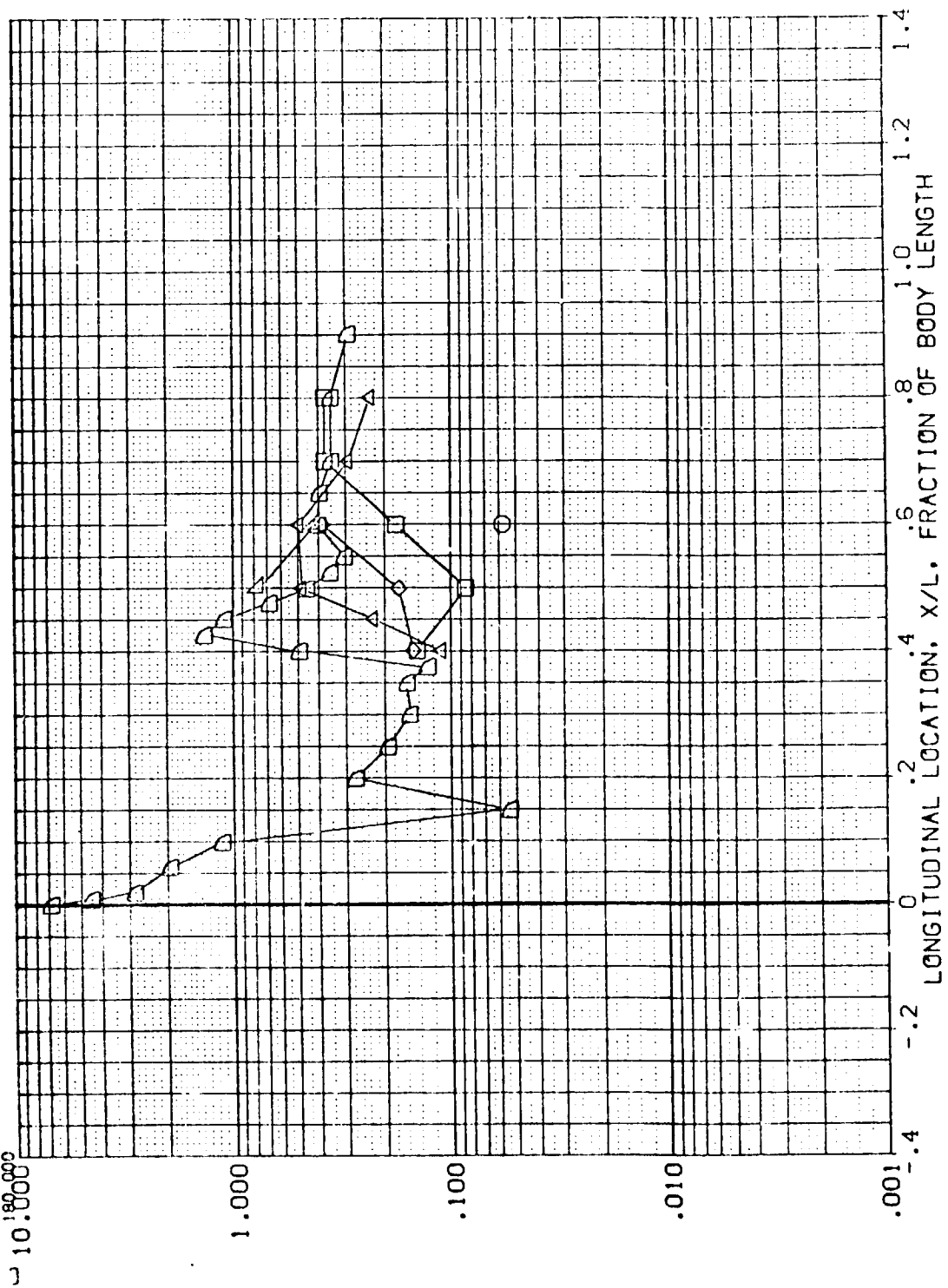


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

(RGM102)

EXTERNAL TANK

1H18 B10C5D7W87M2E4VJ T8

PARAMETRIC VALUES

.000

BETA

.000

ALPHA

6.000

DELTA

.175

HACH

.900

RN/L

4.007

SYMBOL

PHI

67.500

90.000

112.500

135.000

157.500

180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

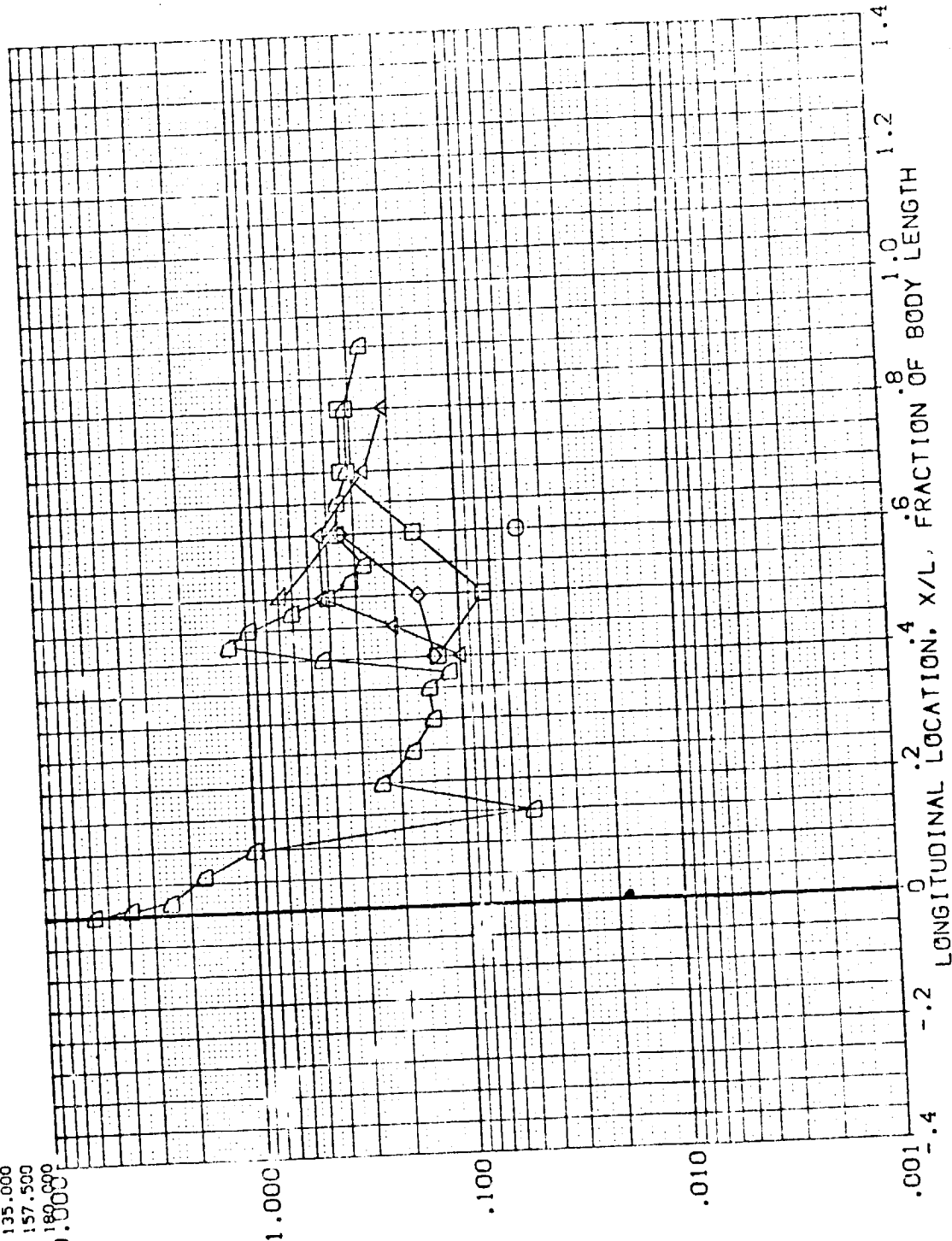


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

IH18 B10C507W87M3F4V5 T8 EXTERNAL TANK (RQMT02)

PARAMETRIC VALUES
 ALPHA .000
 BETA .000
 DELTAH .175

HAW/HT 1.000
 RN/L 4.807

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 □
 ◇
 △
 ▽
 ▽
 ▽

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

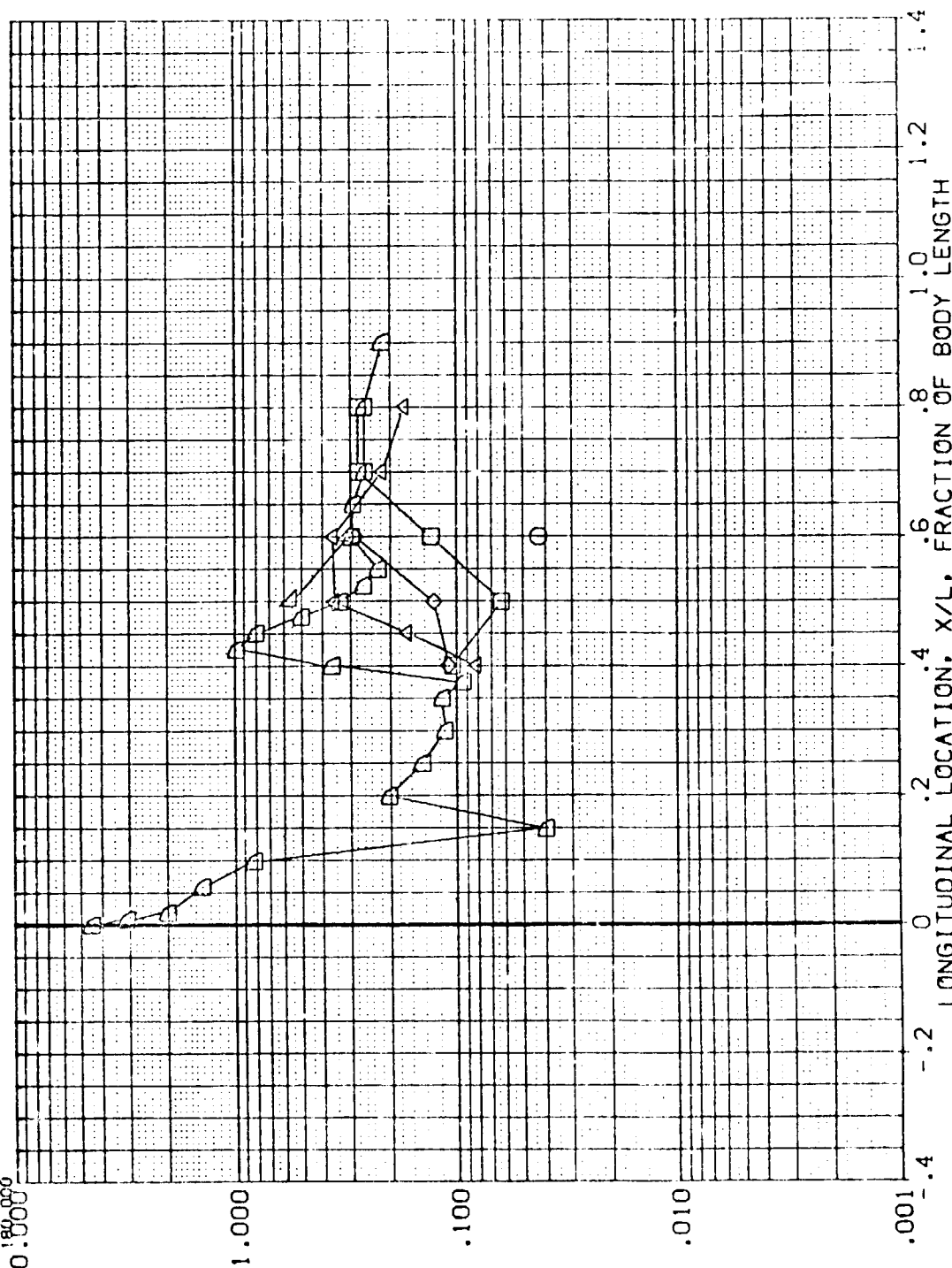


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

SYMBOL PHI HAM/HT R/L 4.908

PARAMETRIC VALUES
ALPHA MACH BETA DELTA
-5.000 5.000 .000 .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

10.000
1.000
0.100
0.010
0.001

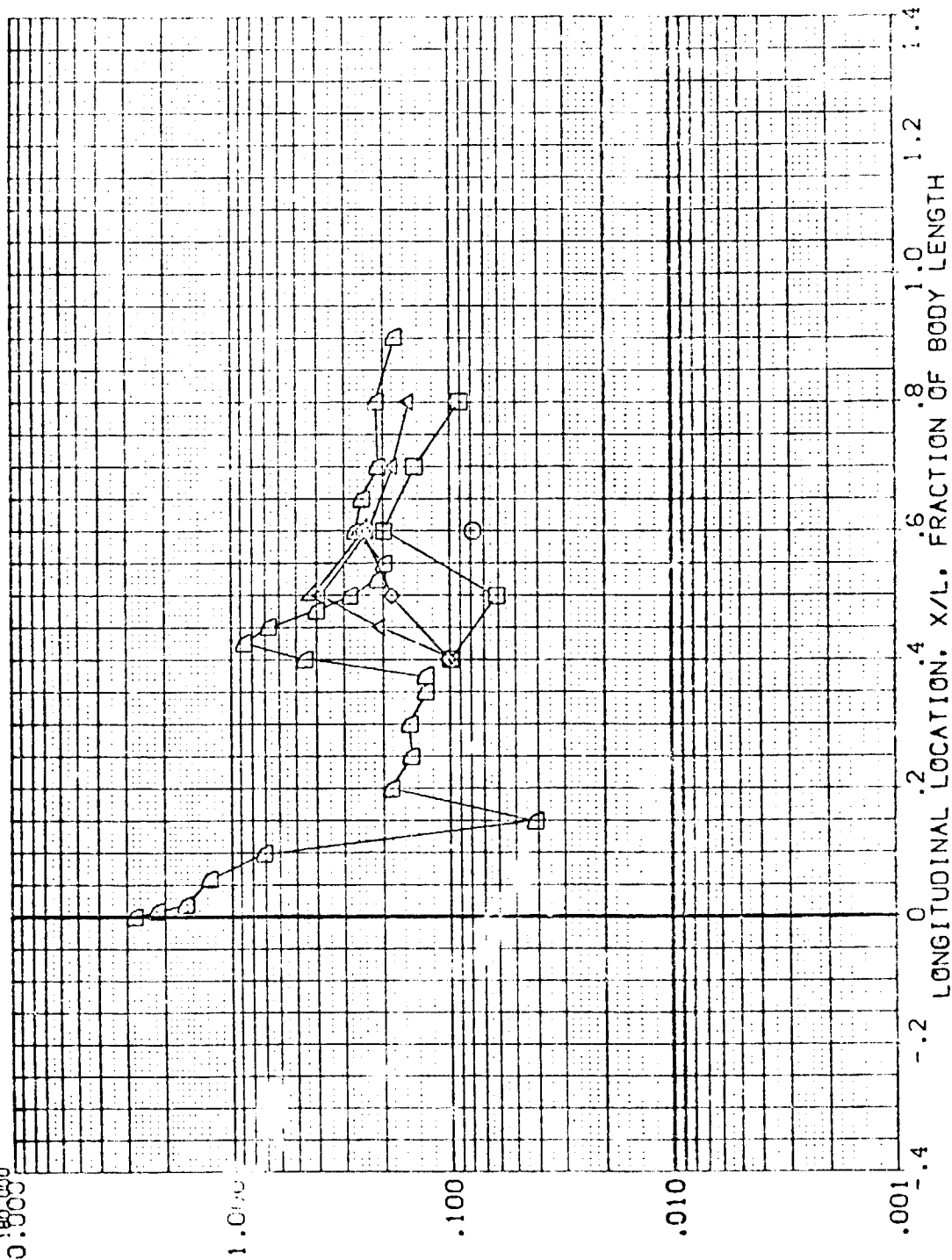


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

1418 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 5.132 DELTAH .175

SYMBOL
 ○ □ ◇ △ ▽

PHI 67.500
 HAW/HT .900
 RN/L 4.908

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

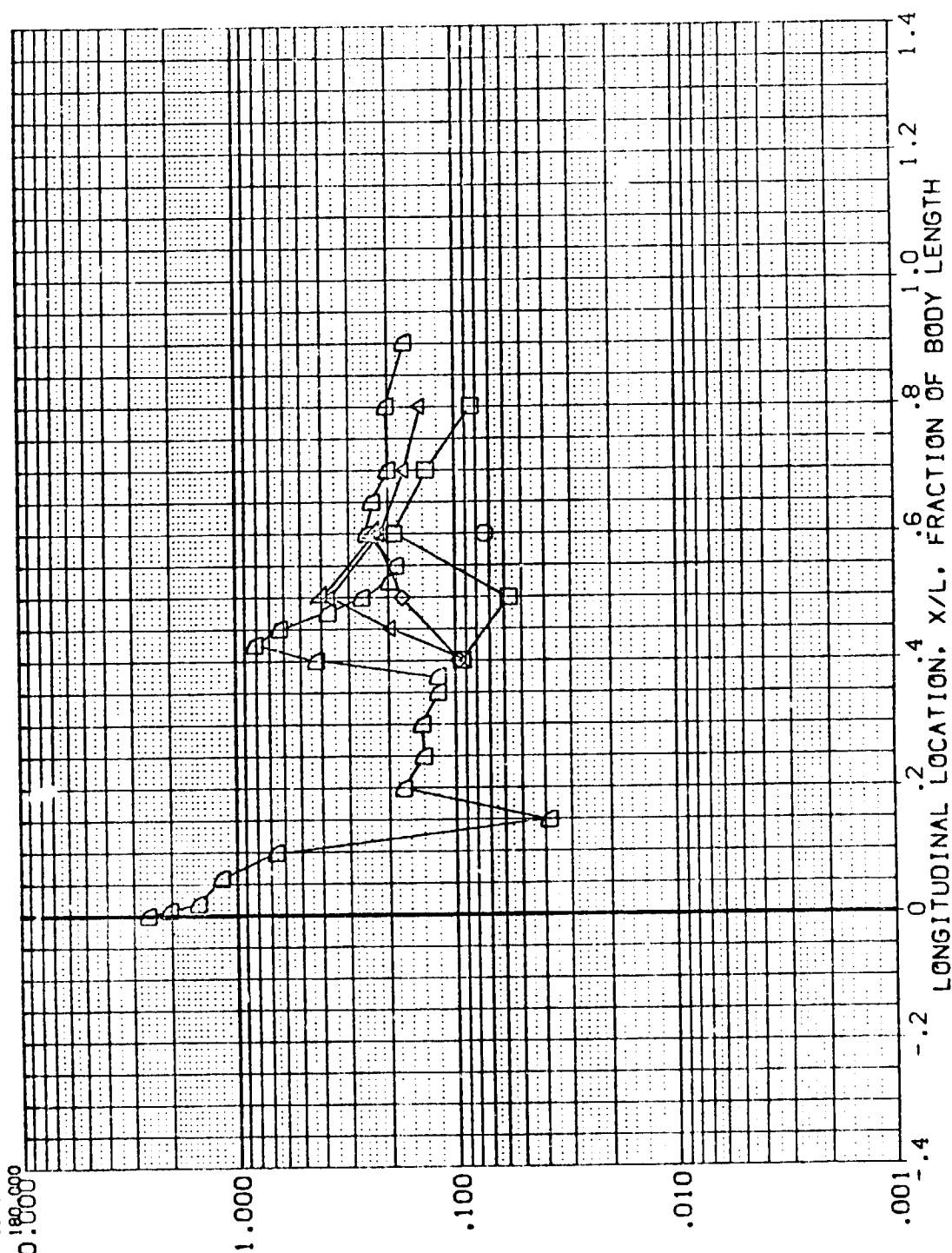


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

IH18 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

SYMBOL PHI HAW/HT RN/L

67.500
90.000
112.500
135.000
157.500
180.000

1.000 4.908

PARAMETRIC VALUES
ALPHA
MACH

-5.000
6.000
BETA
DELTA
.000
.175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

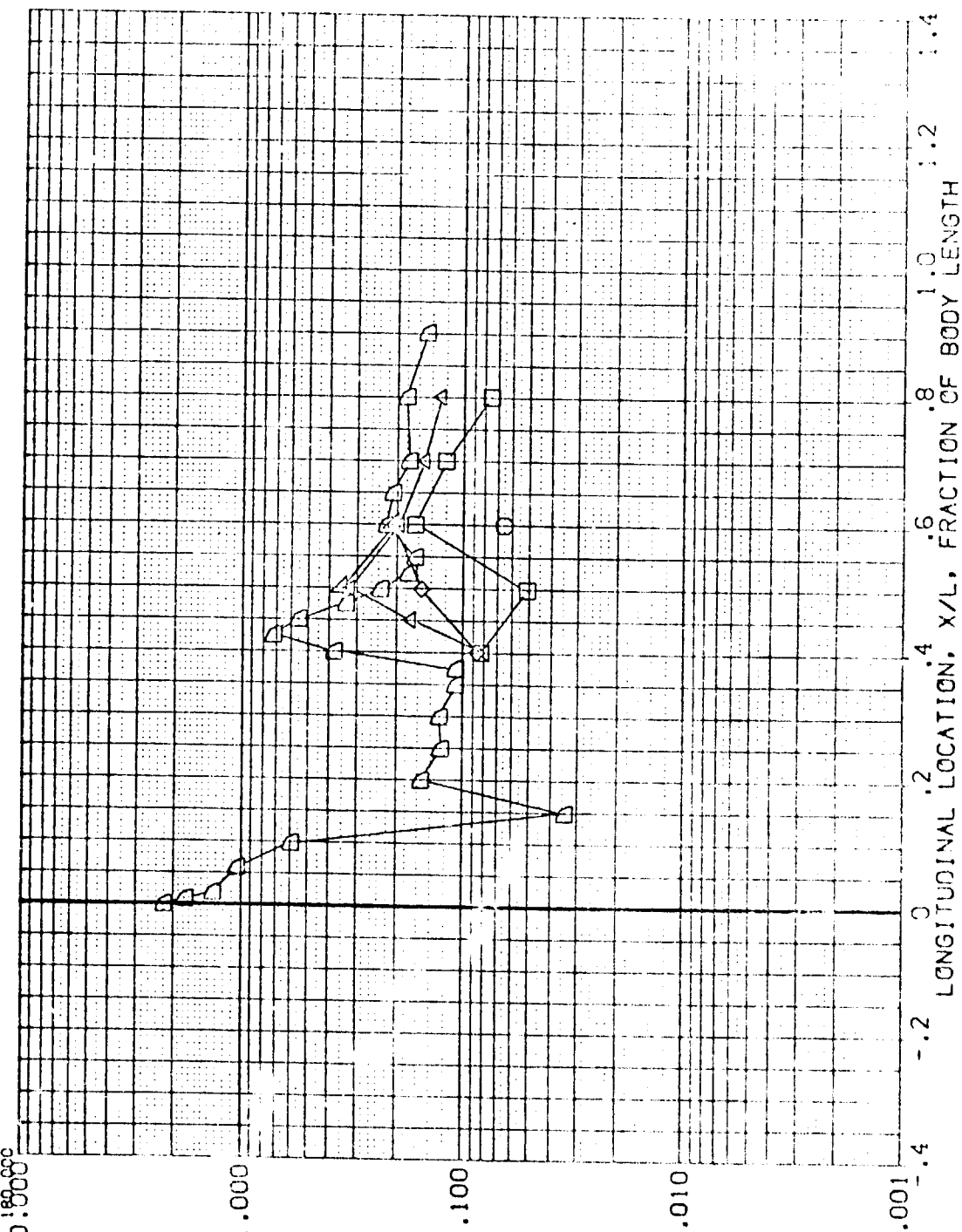


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) B IHI8 810C507487M3F4V5 T8
 (R0MT03) IHI8 810C507487M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

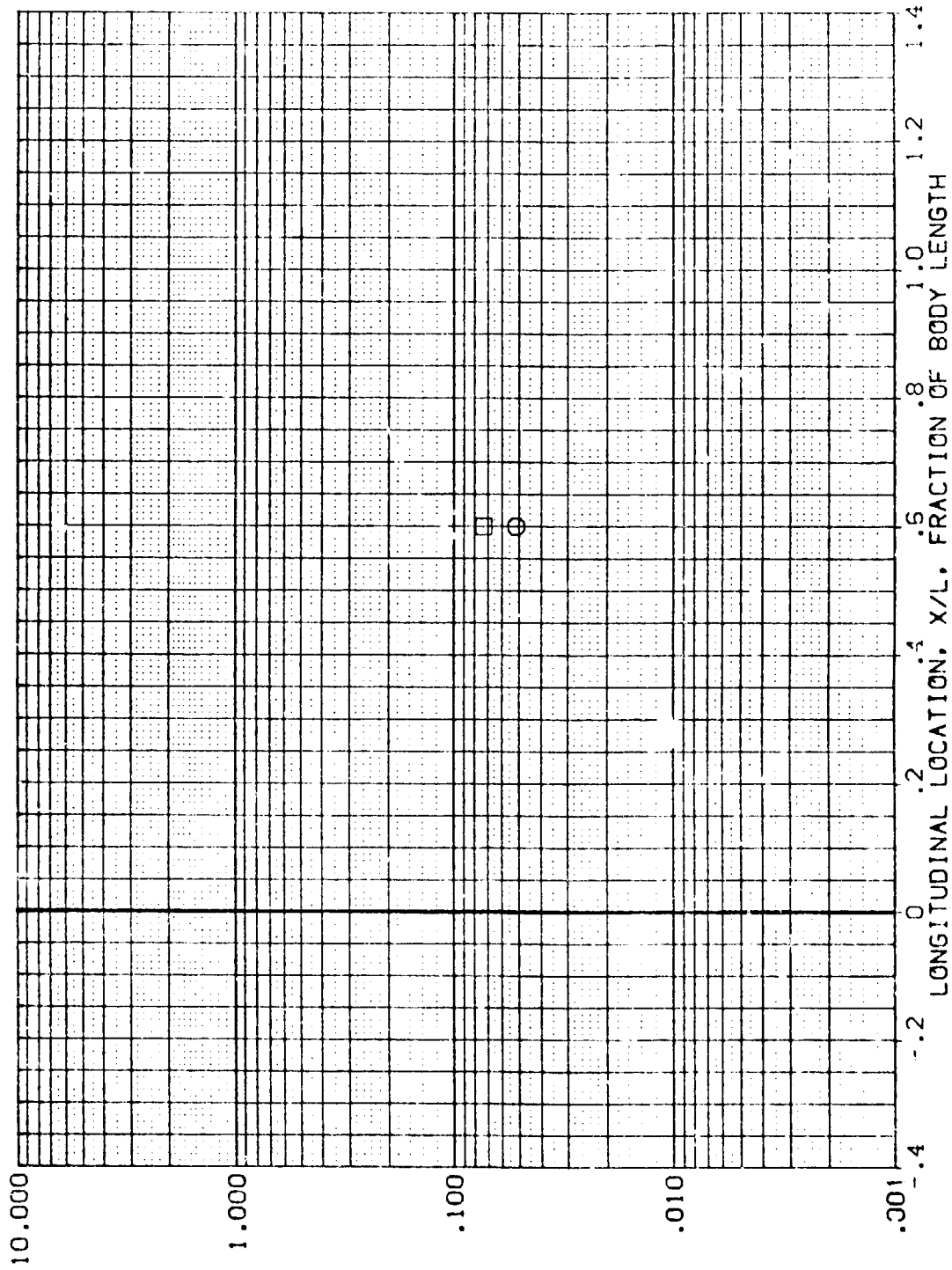


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = .850 PHI = 67.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RHT02) B IM18 810C507487M1-4V5 T8
 (RHT03) B IM18 810C507487M3F4V5 T8

EXTERNAL TANK MACH
 EXTERNAL TANK .000 6.000
 .000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

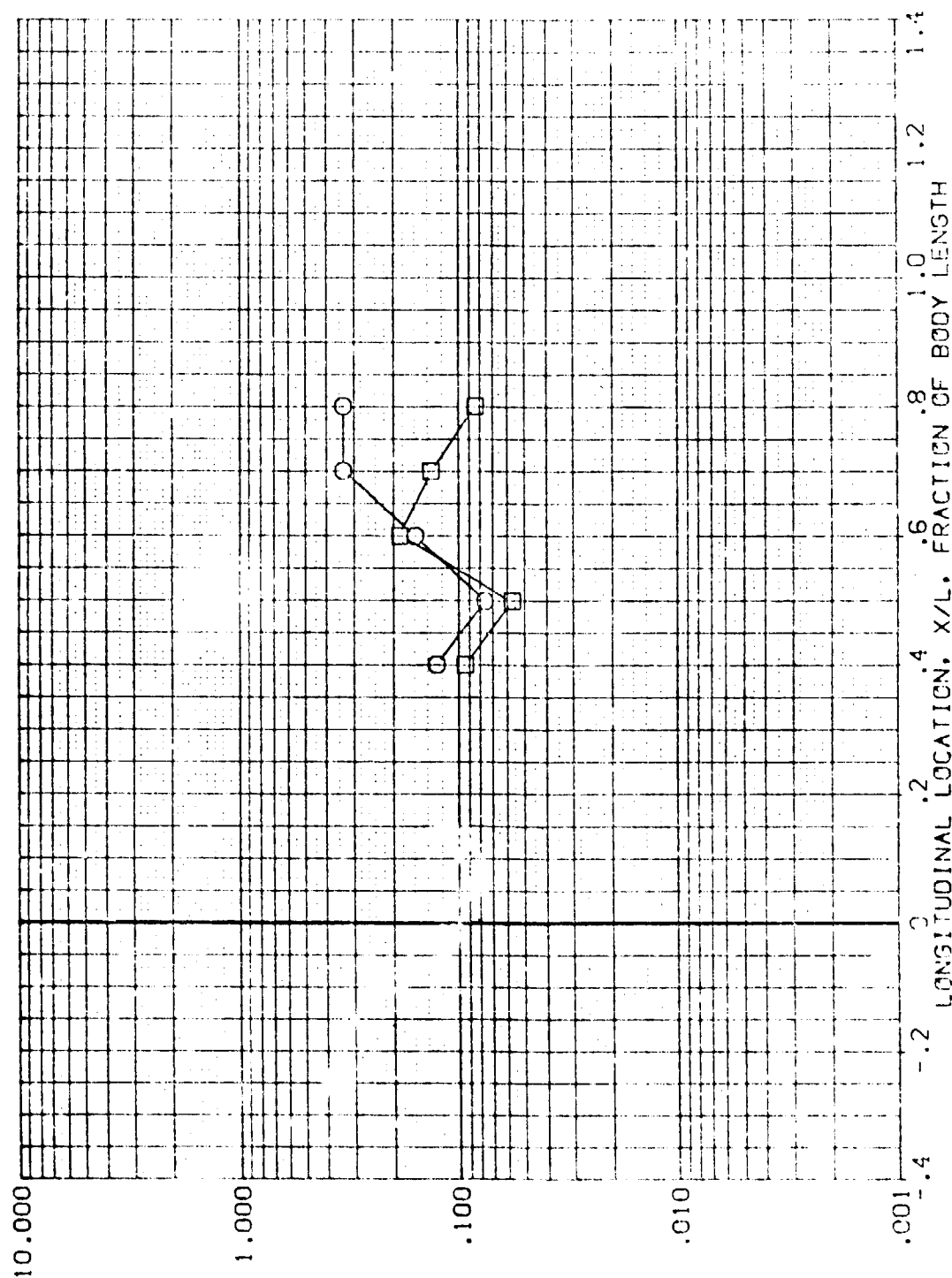


FIG 16 CRBITER + ET - ET DATA - NO TRIPS

$Re/L = 4.807$ $h_{AW}/h_{REF} = .850$ $\phi = 90.000$



DATA SET SYMBOL: (R0MT03) 8
 CONFIGURATION DESCRIPTION: 1H18 B10C502W87M3F4V5 T8
 1H18 B10C502W87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

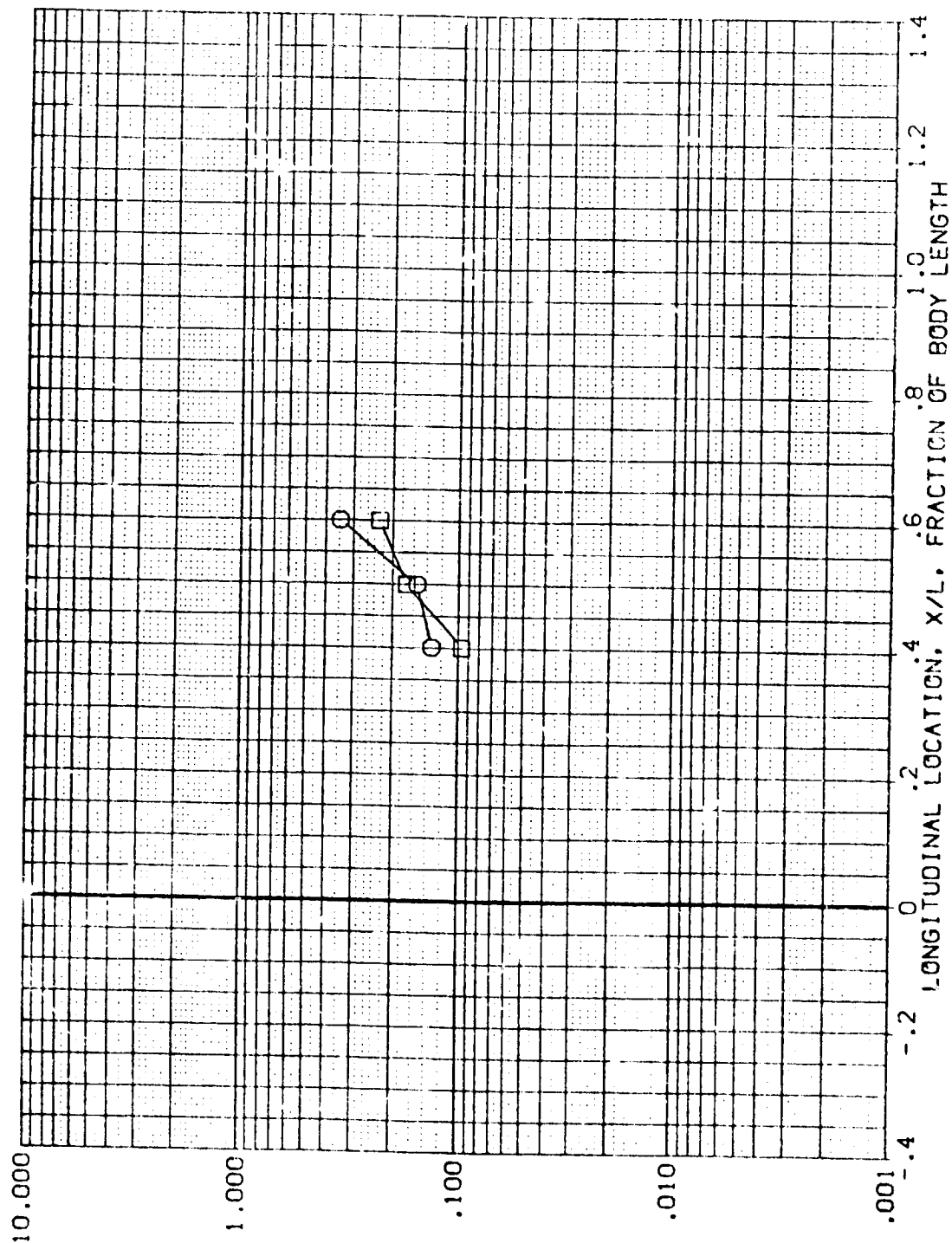


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = .850 PHI = 112.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (RGTG2) B B10C507*87*3F4V5 T8 .000 .000 6.000
 (RGTG3) B B10C507*87*3F4V5 T8 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

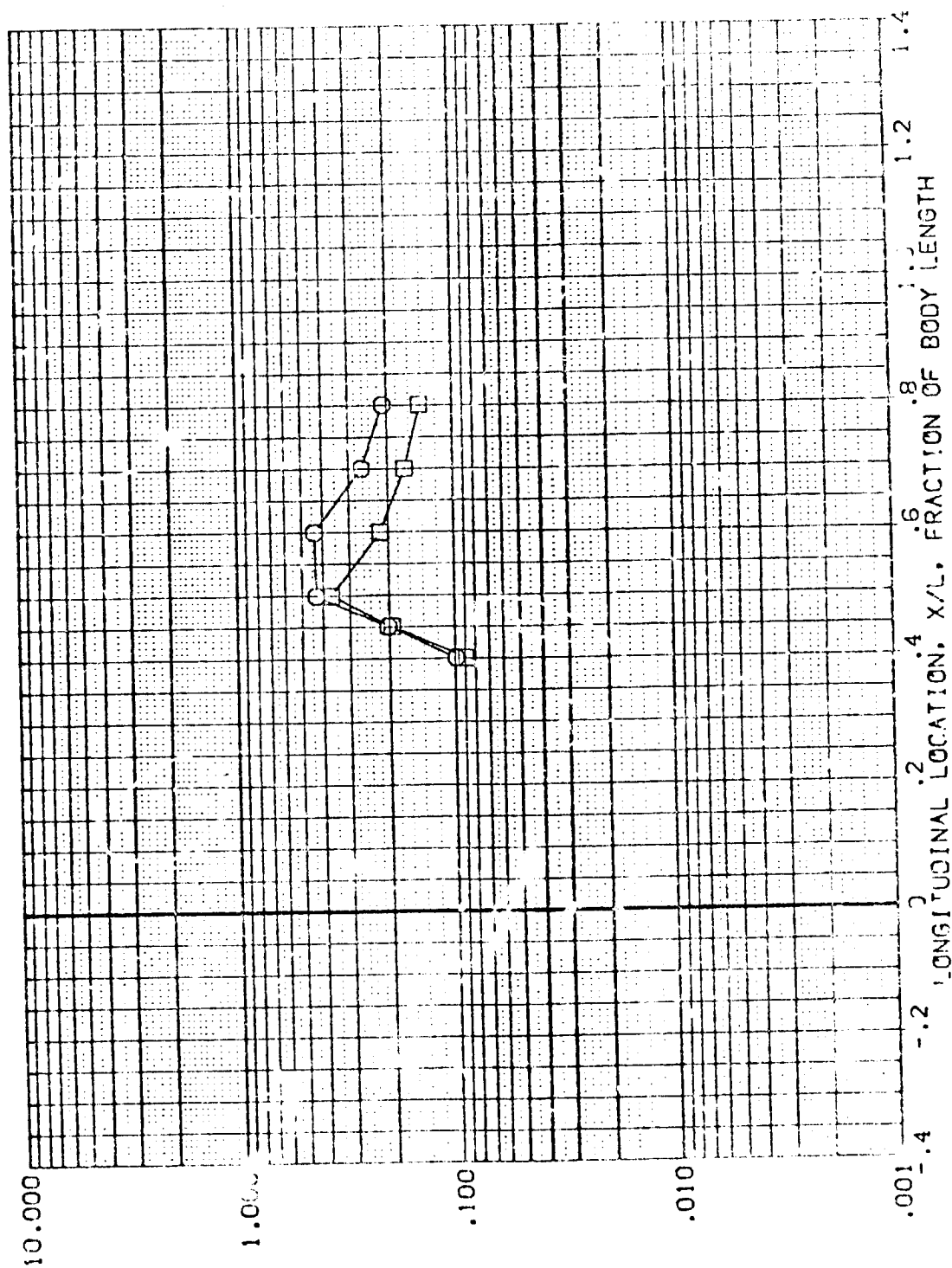


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

$Q_{w}/L = 4.807$ HAW/HT = .850 PHI = 135.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) 8 1H18 910C507W87M3-4VS 18
 (R0M103) 8 1H18 810C507W87M3F4VS 18

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

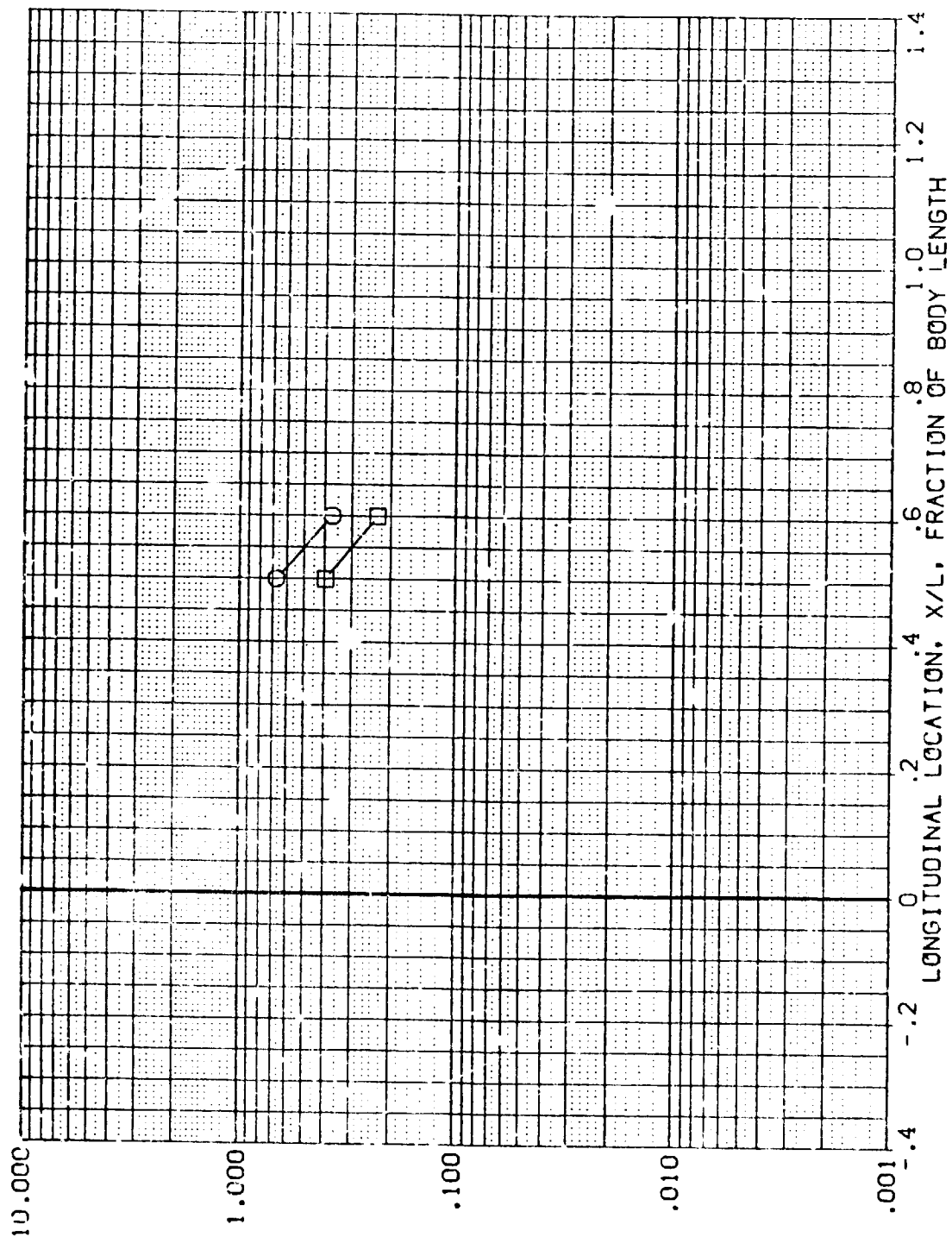


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = .850 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R2MT02) [H18 B10C507V87M3F4V3 T8
 (R2MT03) [H18 910C507V87M3F4V3 T8

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 5.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

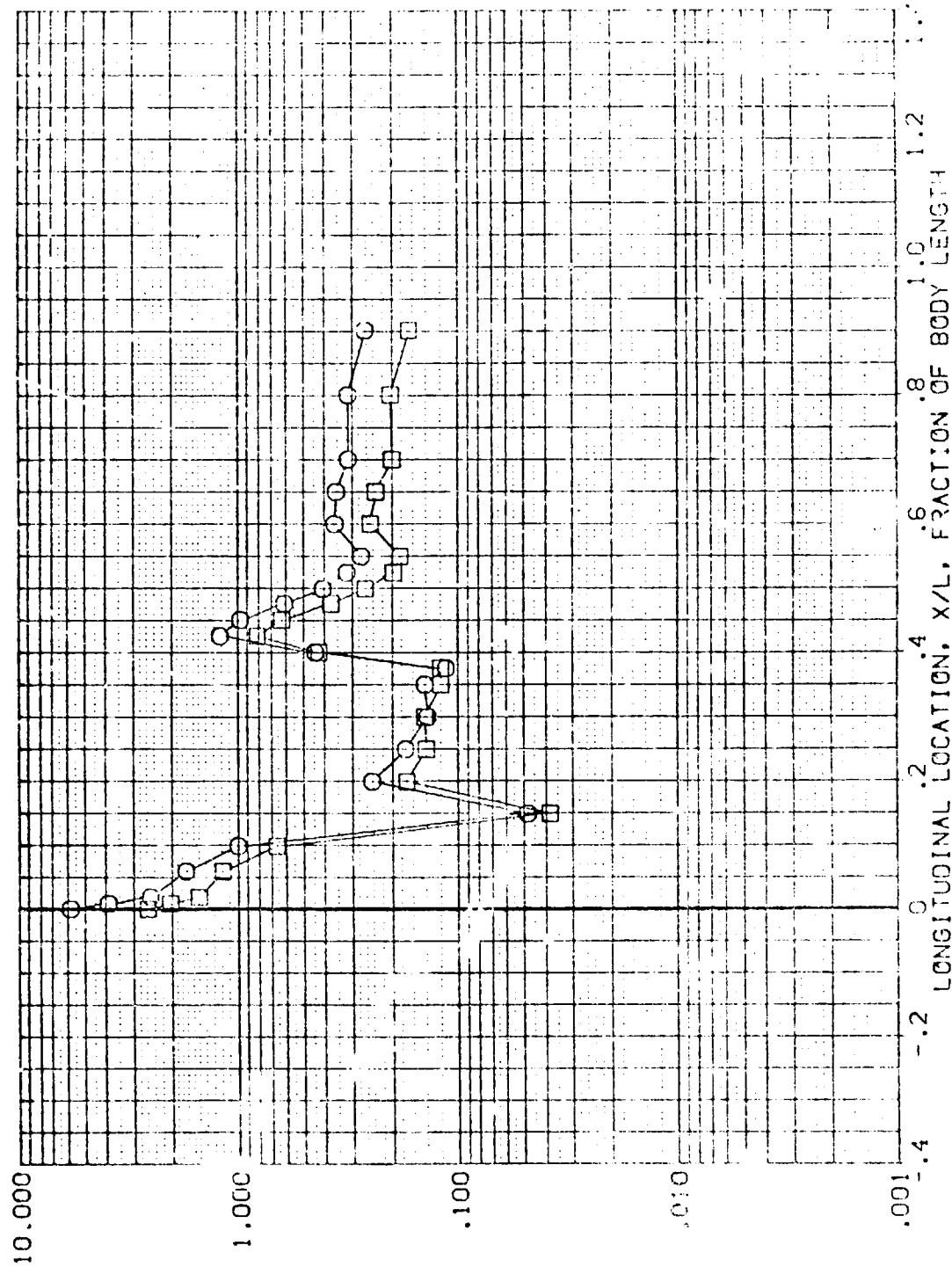


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HI = .850 PHI = 180.000

DATA SET SYMBL CONFIGURATION DESCRIPTION
 (RQMT02) [M18 810C507M87M3F4V5 T8
 (RQMT03) [M18 810C507M87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

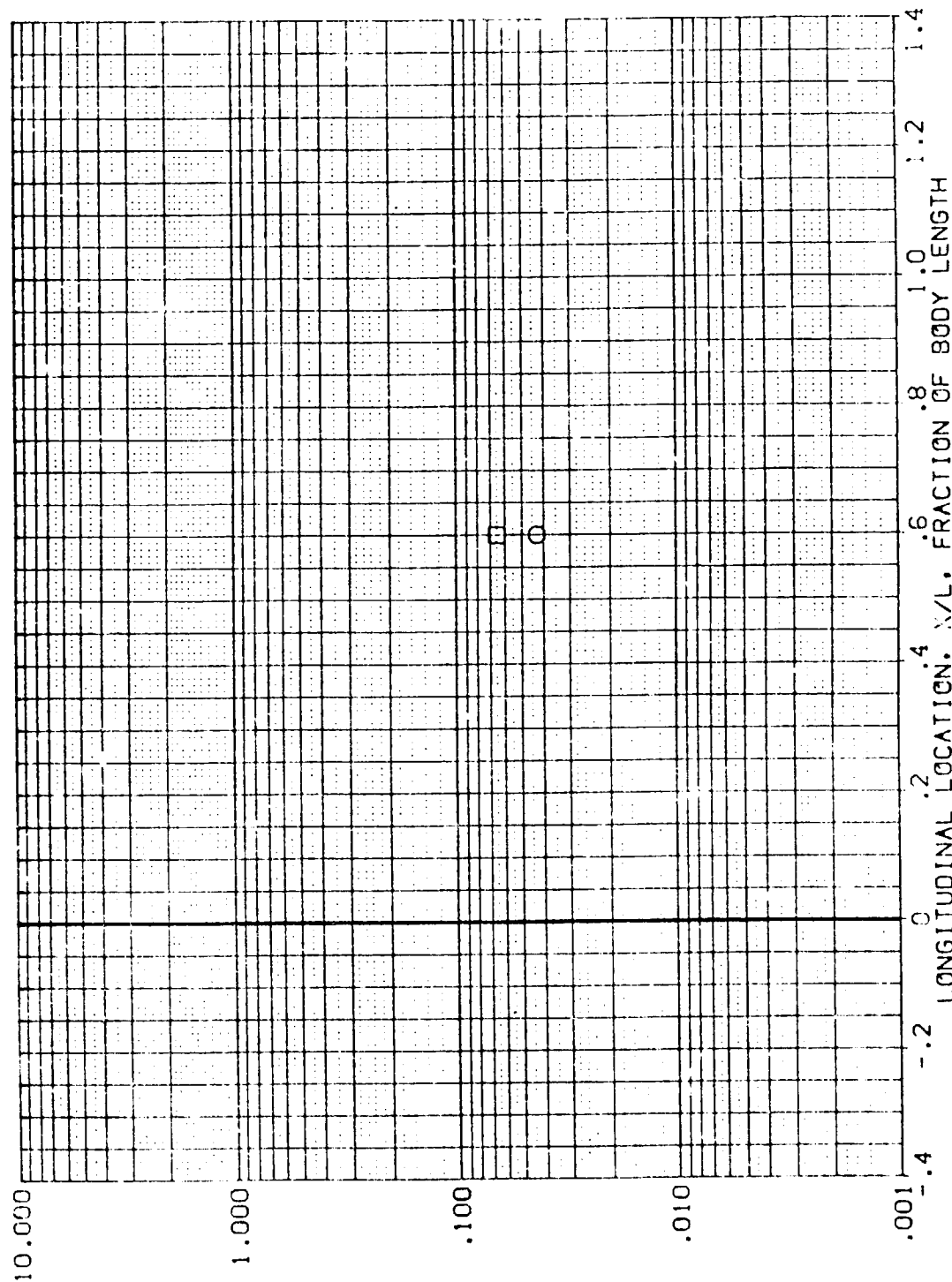


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 PHI = 67.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT02) 3 IH18 810C507W87M3F4V5 T8
 (RCHT03) 3 IH18 810C507W87M3F4V5 T8

EXTERNAL TANK EXTERNAL TANK
 ALPHA MACH
 .000 6.000
 .000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

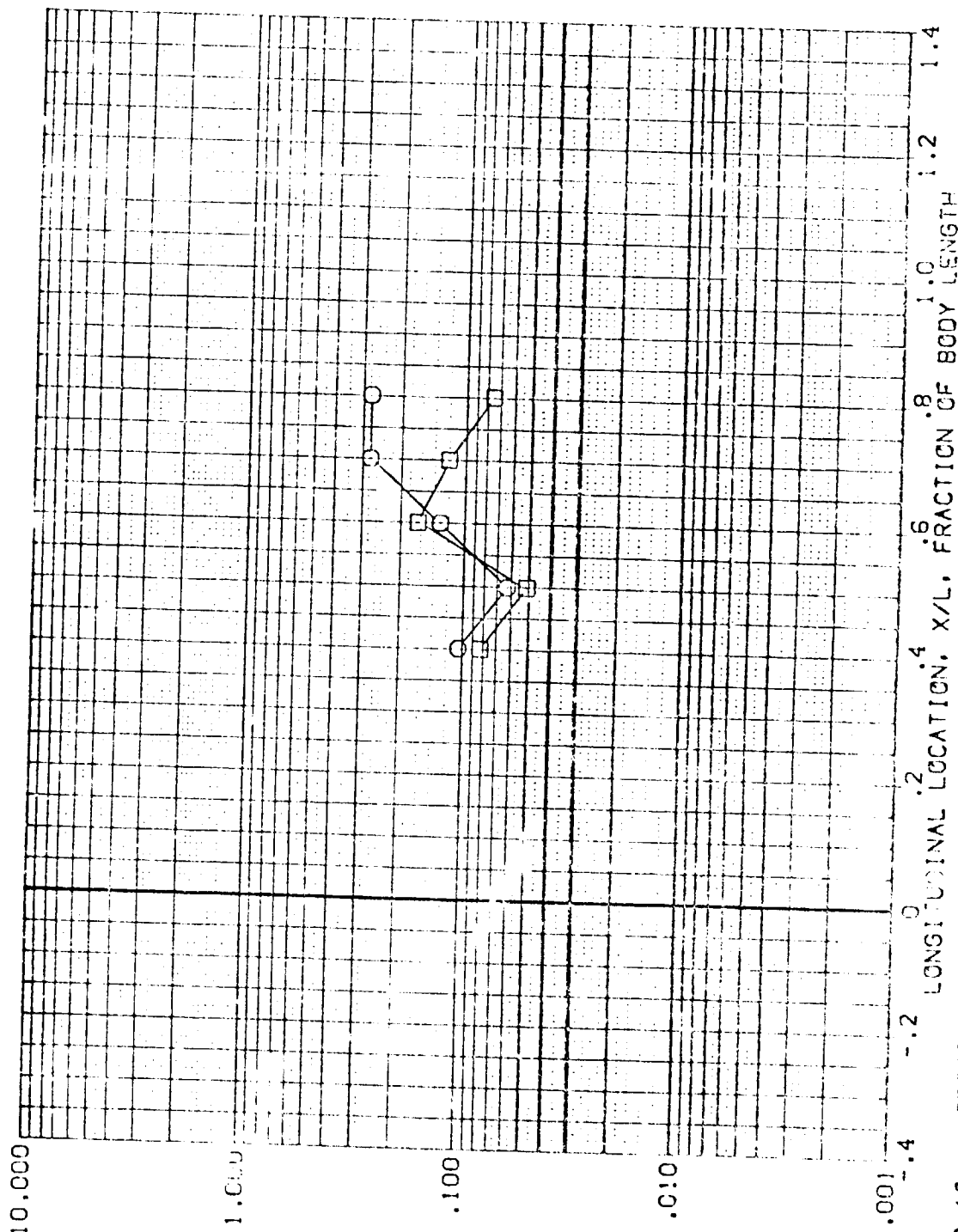


FIG 16 CRBITER + ET - ET DATA - NO TRIPS

QN/L = 4.807 HAW/HT = 1.000 PHI = 90.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT02) 8 IN18 8100507#87M3F4V5 T8
 (RMT03) 8 IN18 8100507#87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

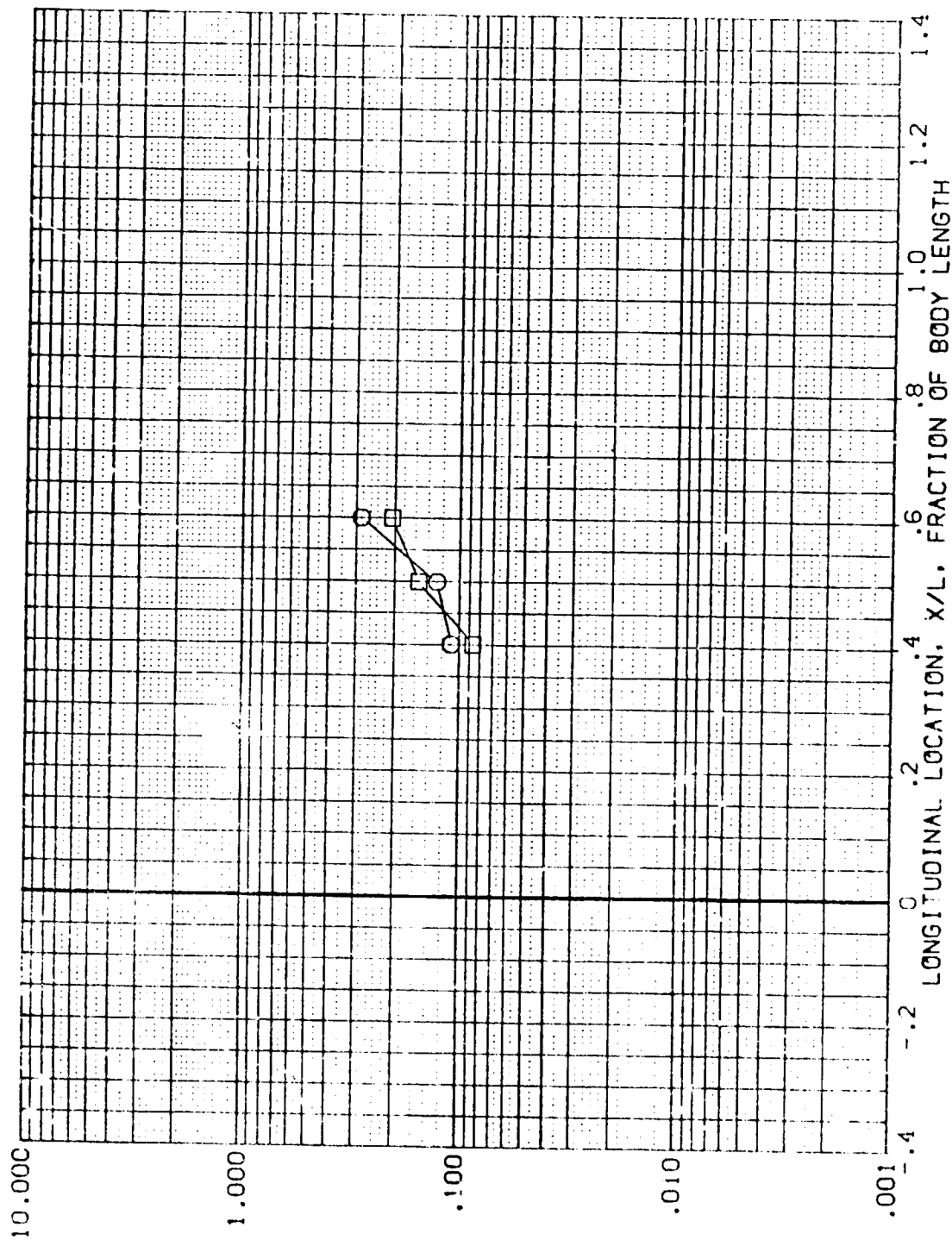


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 PHI = 112.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCMT02) 1H18 B10C507W87M3F4V5 T8
 (RCMT03) 1H18 B10C507W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

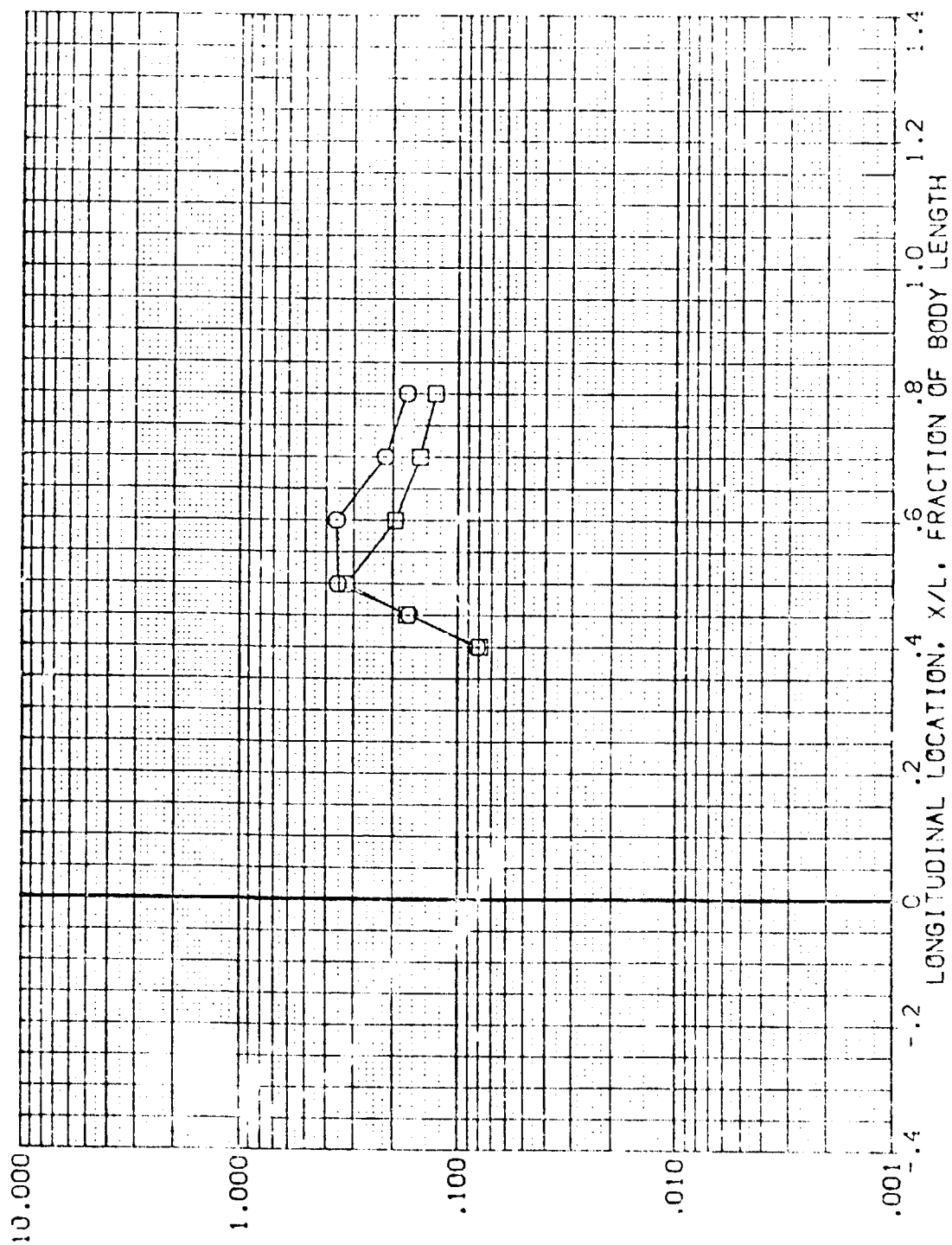


FIG 16 GRC11ER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HTE = 1.000 PHI = 135.000

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(RMT02)	IN:8 B10C5U7W87M3K4V5 T8	.000	.000	6.000
(RMT03)	IN:8 B10C5U7W87M3K4V5 T8	.000	-5.000	6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

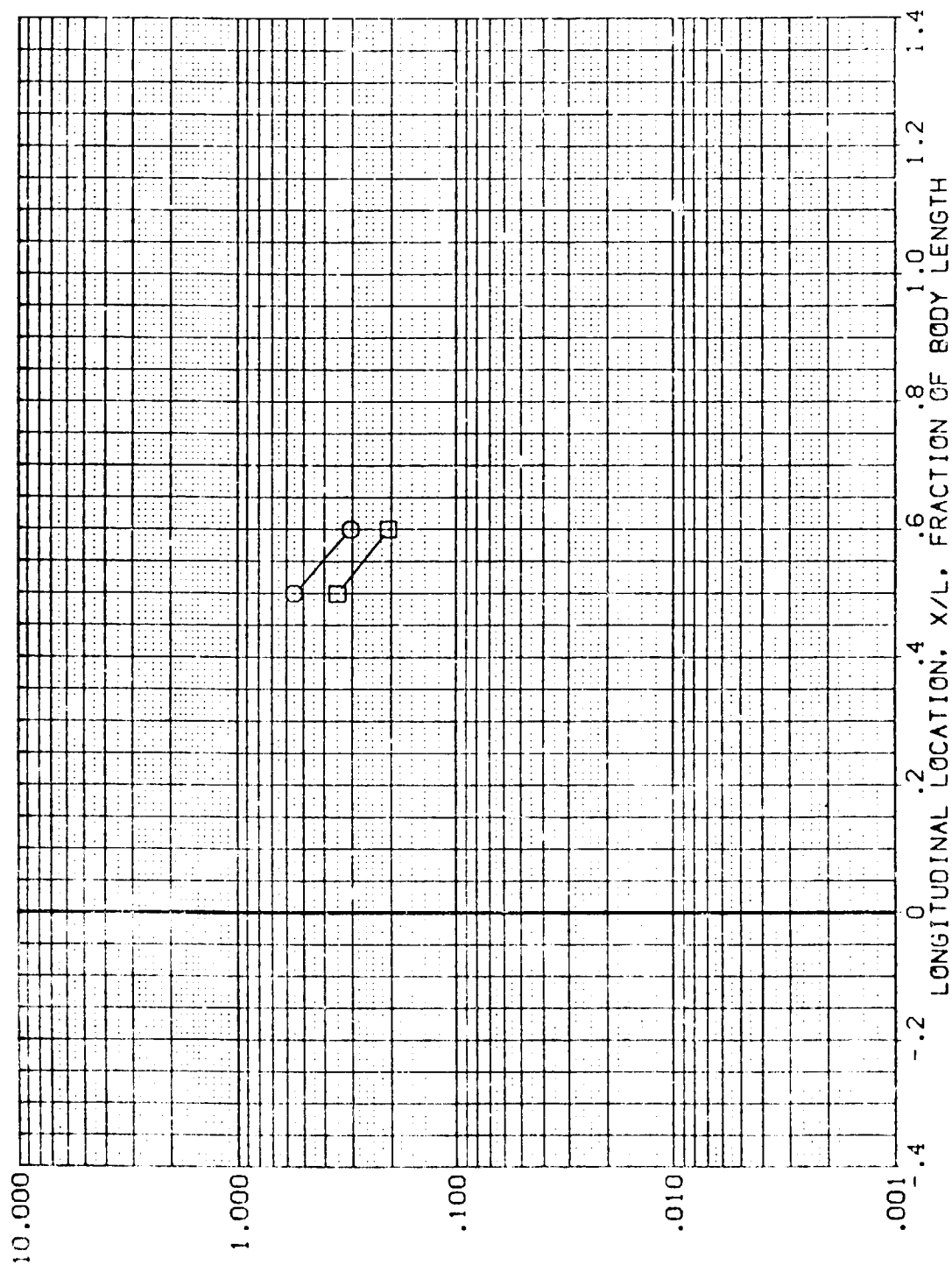


FIG 16 ORBITER + ET - ET DATA - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 PHI = 157.500

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT02) 0119 9100507*8743F4V5 18
 (92-103) 0118 9100507*8743F4V5 18

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

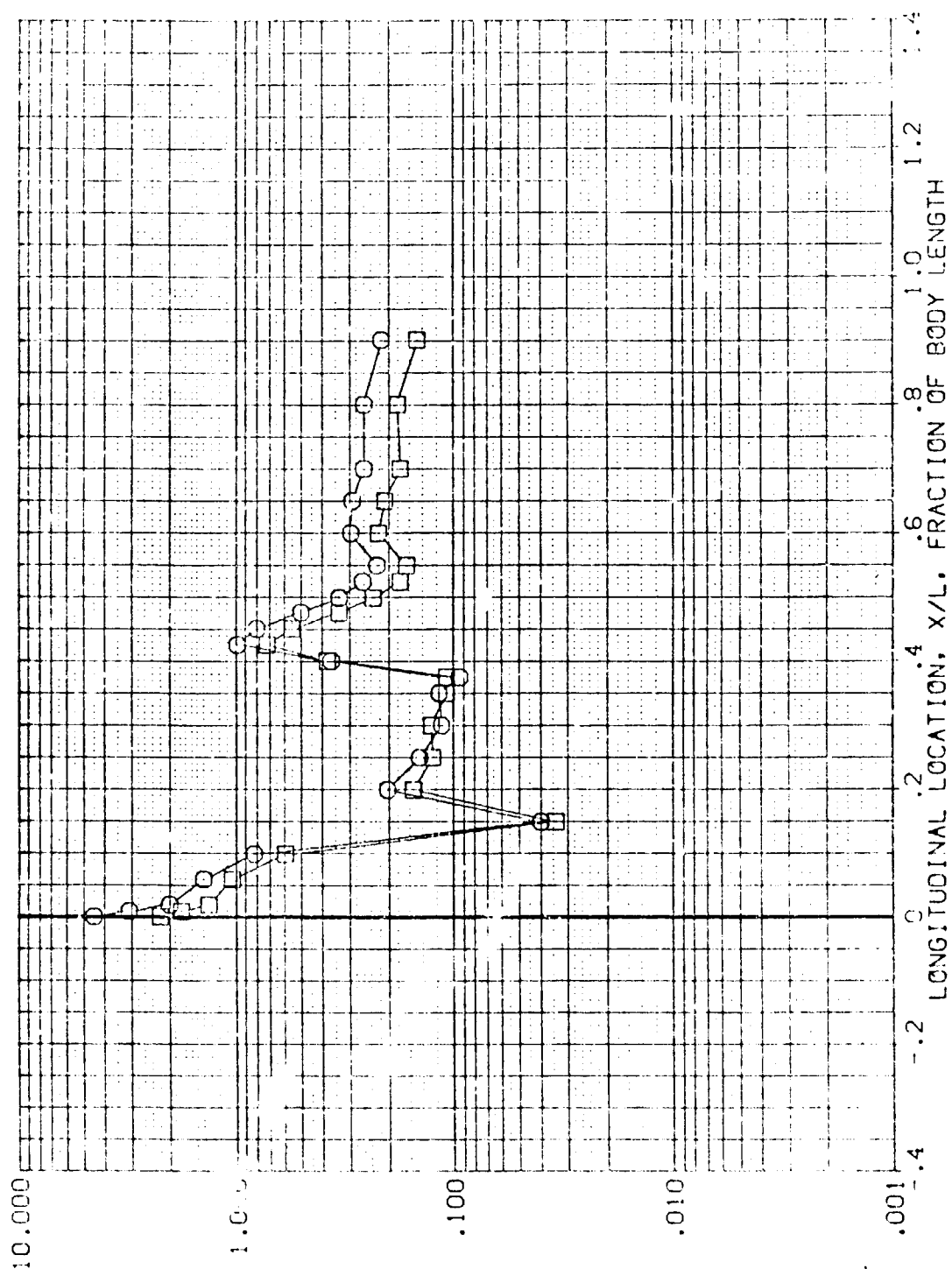


FIG 16 CR8ITER + ET - ET DATA - NO TRIPS

$Re/L = 4.807$ $h_{AW}/h_T = 1.000$ $\Phi = 180.000$

1418 310C507W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SREFD. Pnt HAW/HT RN/L
 67.500 .850 4.805
 90.000
 112.500
 135.000
 157.500
 180.000

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .047

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

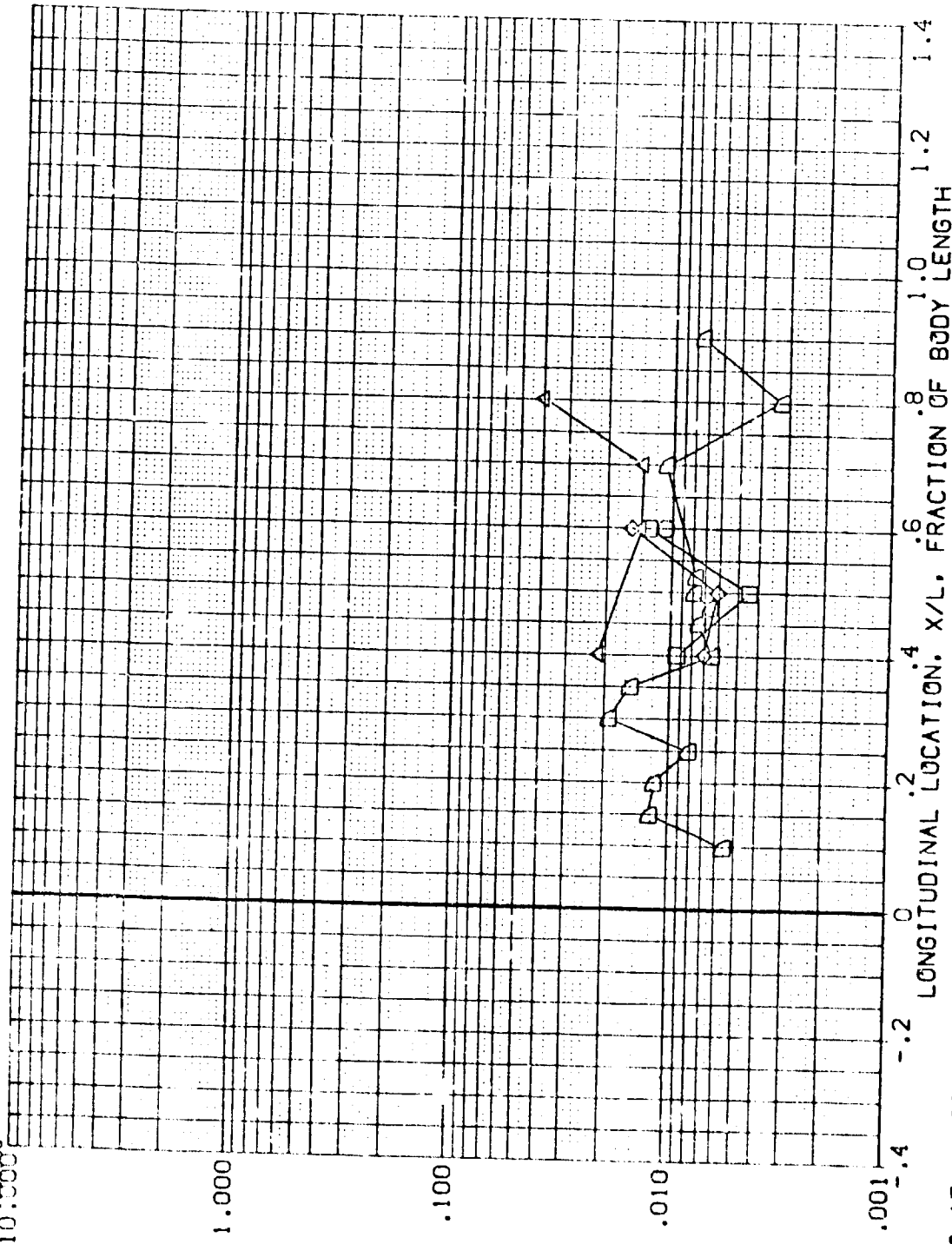


FIG 17 ORBITER + ET - ET DATA - LARGE TRIPS

1H18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .047
 BETA .000
 DELTAH .175

SYMBOL PHI HAW/HT RN/L
 10.000 67.500 .900 4.805
 90.000 90.000
 112.500 112.500
 135.000 135.000
 157.500 157.500
 180.000 180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

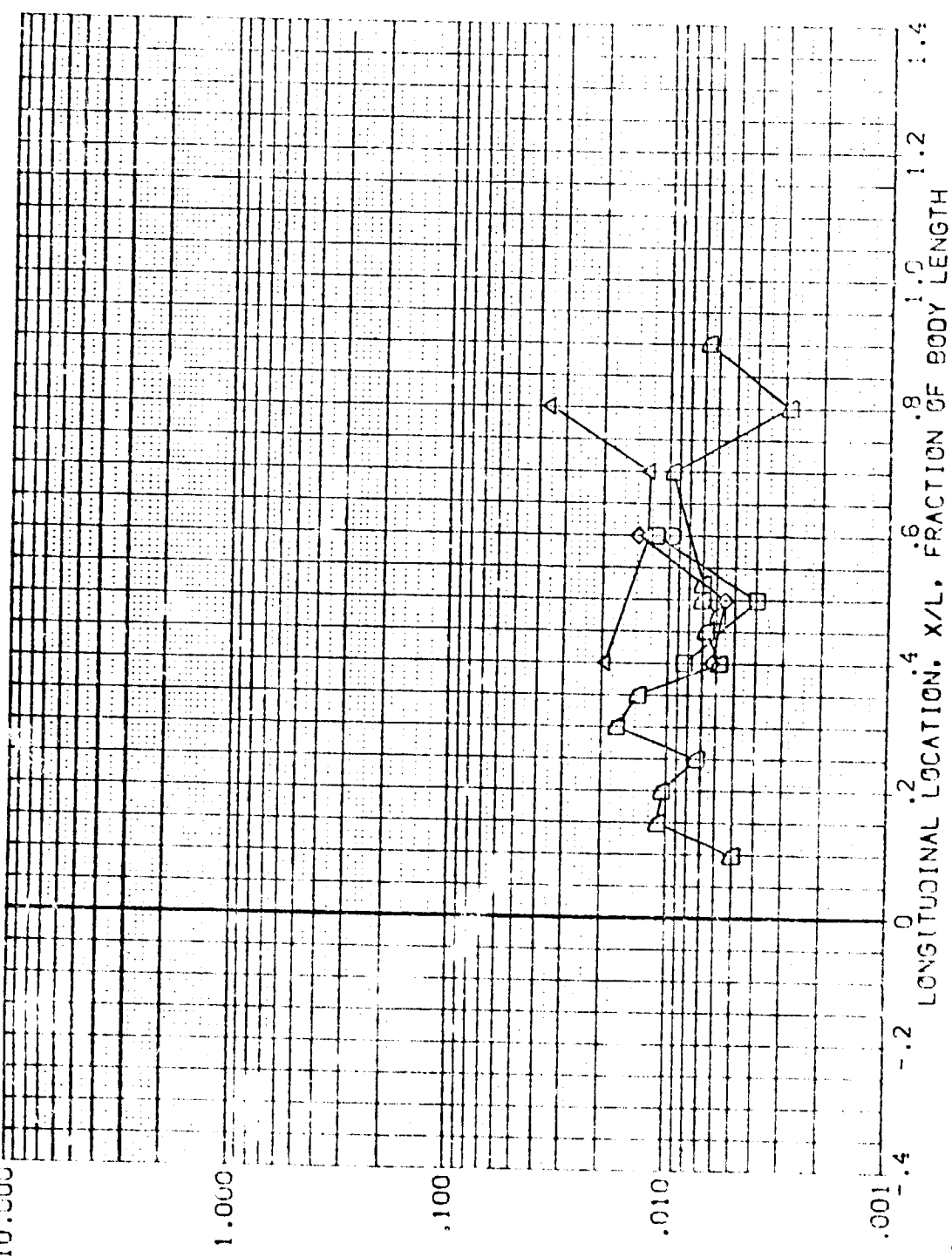


FIG 17 ORBITER + ET - ET DATA - LARGE TRIPS

1H:8 810C50/W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .047
 BETA .003
 DELTAH .175

SYMBOL PUL HAM/HT RN/L
 57.500
 90.000
 112.500
 135.000
 157.500
 180.000
 4.805

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

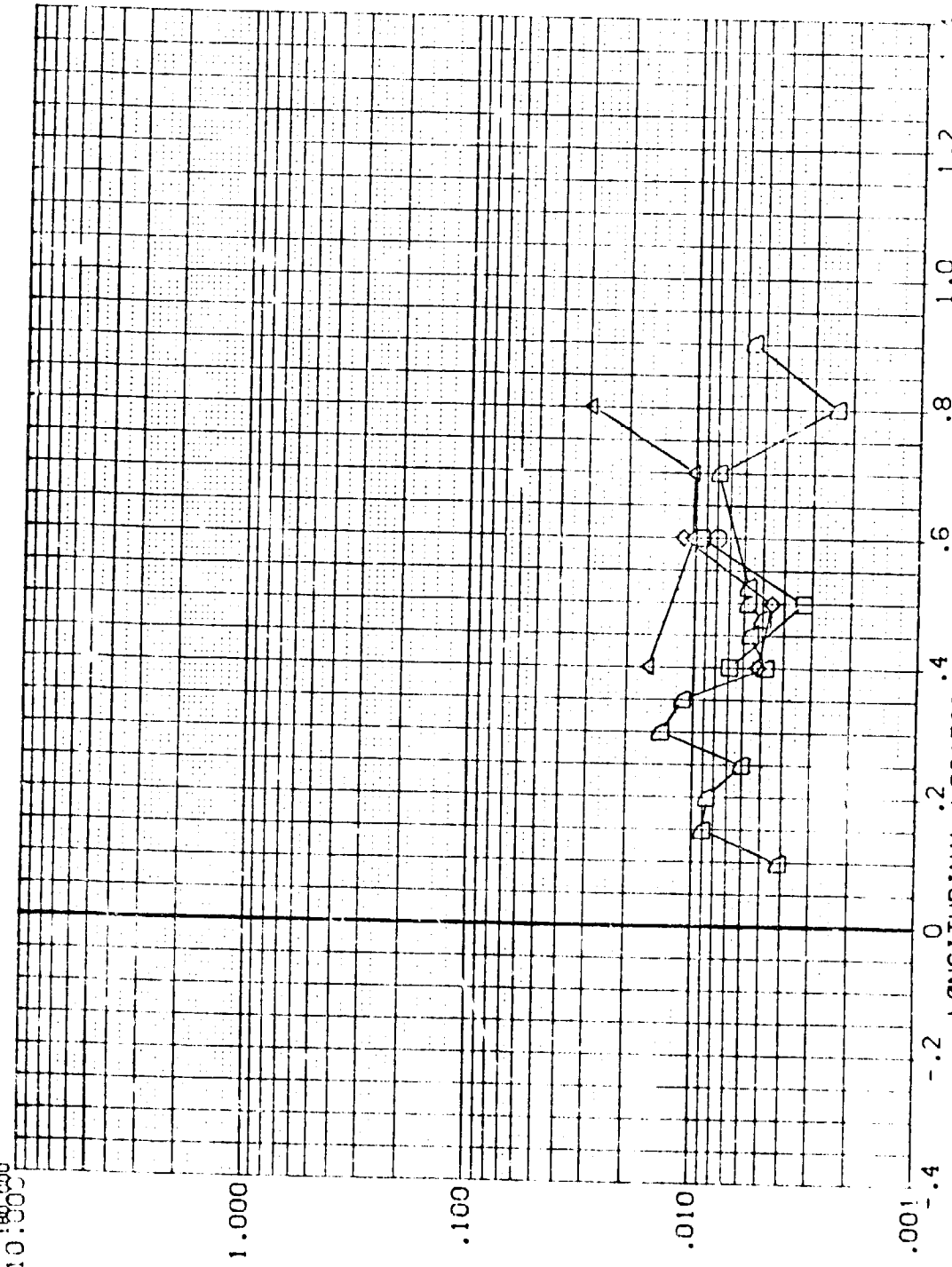


FIG 17 ORBITER + ET - ET DATA - LARGE TRIPS

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

IN18 B100507W87M3F4V5 18 X26 EXTERNAL TANK (R0MT12)

SYMBOL	PHI	HAW/HT	RA/L	PARAMETRIC VALUES
67.500	.850	4.543	ALPHA	.000
90.000			MACH	6.000
112.500			X-RT	.031
135.000				
157.500				
180.000				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

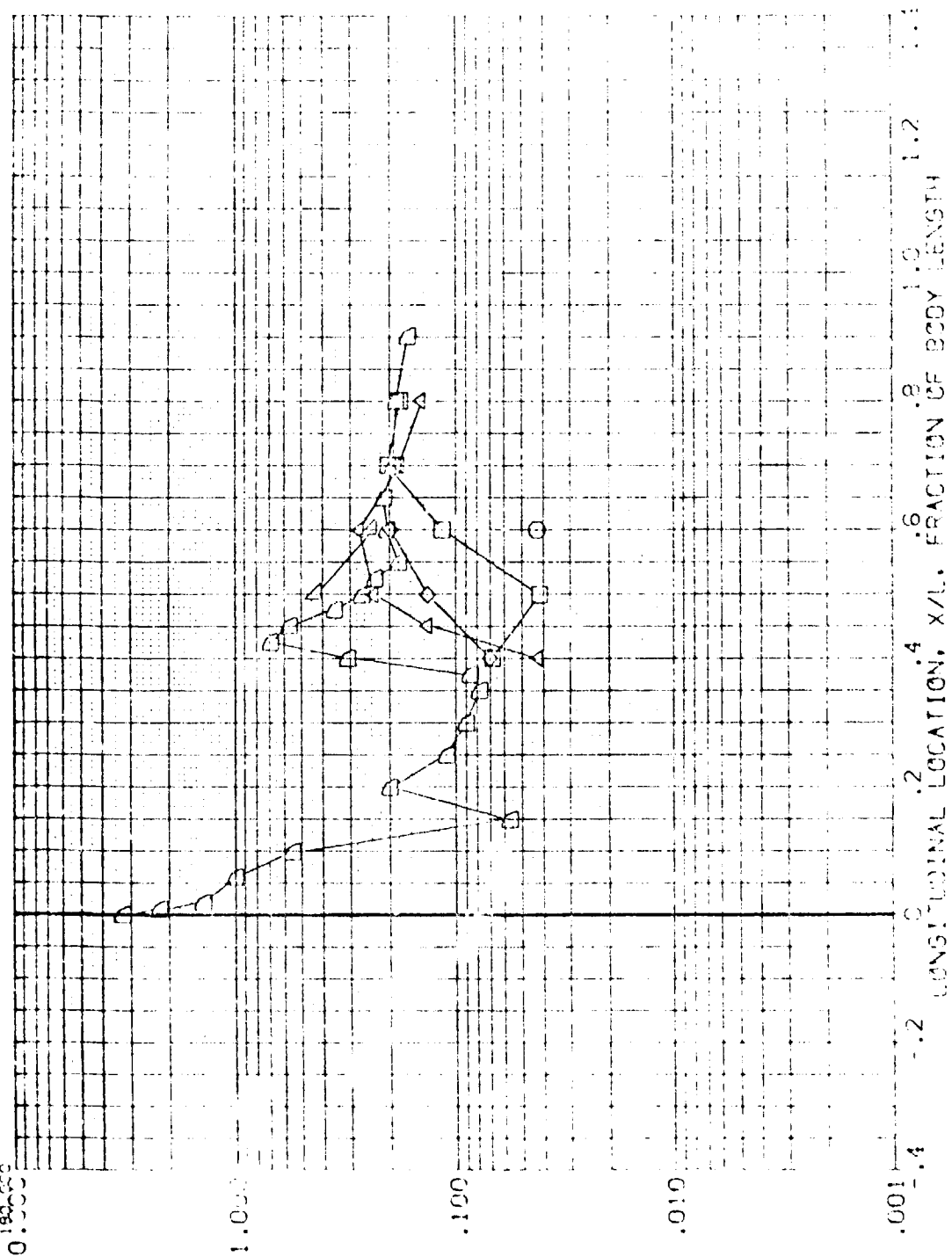


FIG 18 ORBITER FET - ET DATA - SMALL TRIPS

1H18 B10C5D7*87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

PARAMETRIC VALUES
ALPHA .000 BETA .000
MACH 5.000 DELTAH .175
X-HT .031

SYMBOL P-11 MACH 5.000 RN/L 4.543

67.500
90.000
112.500
135.000
157.500
180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

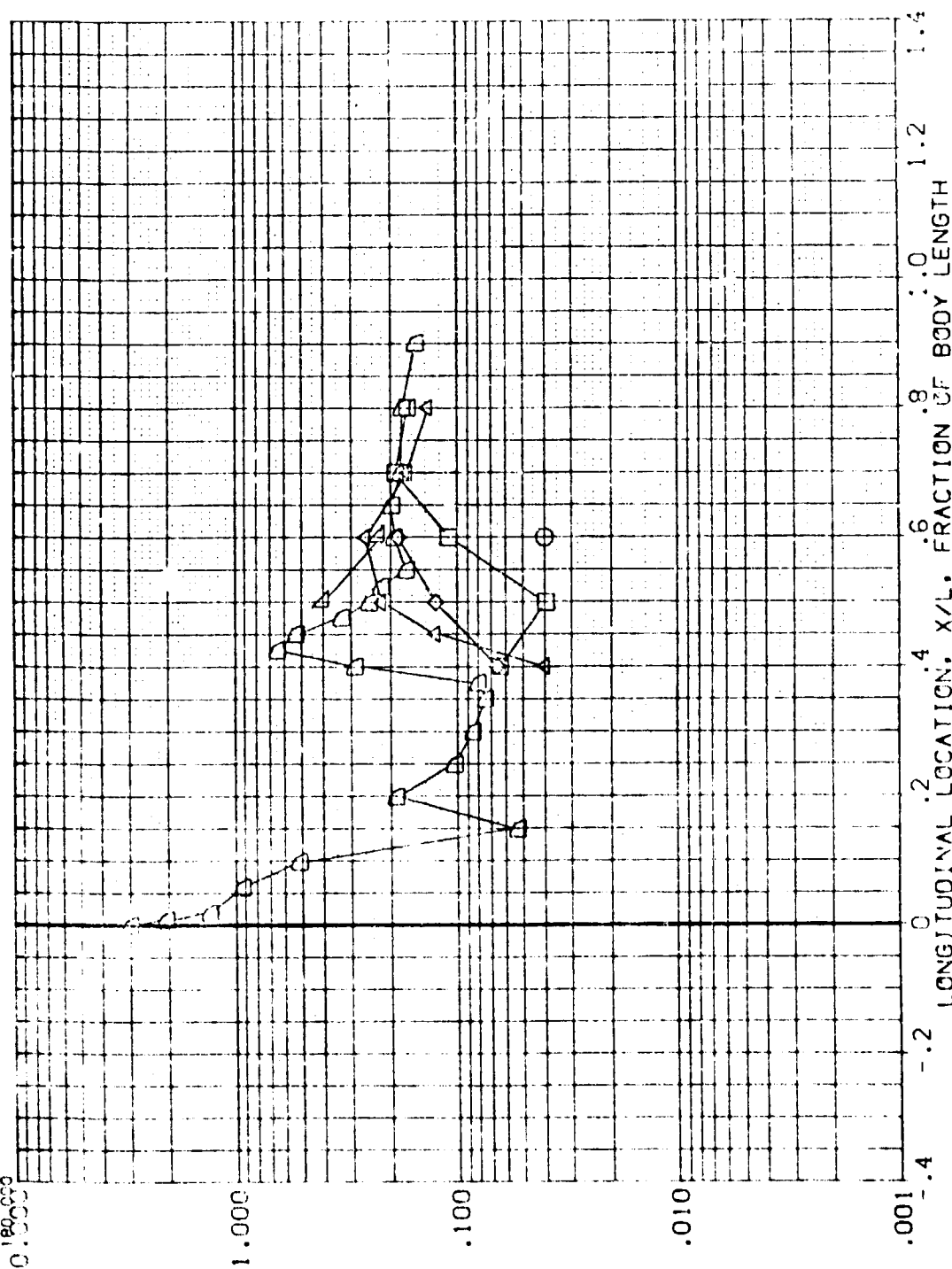


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

IN18 B100507W87M0F4V5 18 X26 EXTERNAL TANK (RQMT12)

PARAMETRIC VALUES
 ALPHA .000 BETA .000
 MAC4 6.000 DELTA4 .175
 X-WT .031

SYMBOL PWI HAW/NT RN/L
 97.500 1.000 4.643
 90.000
 112.500
 135.000
 157.500
 180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

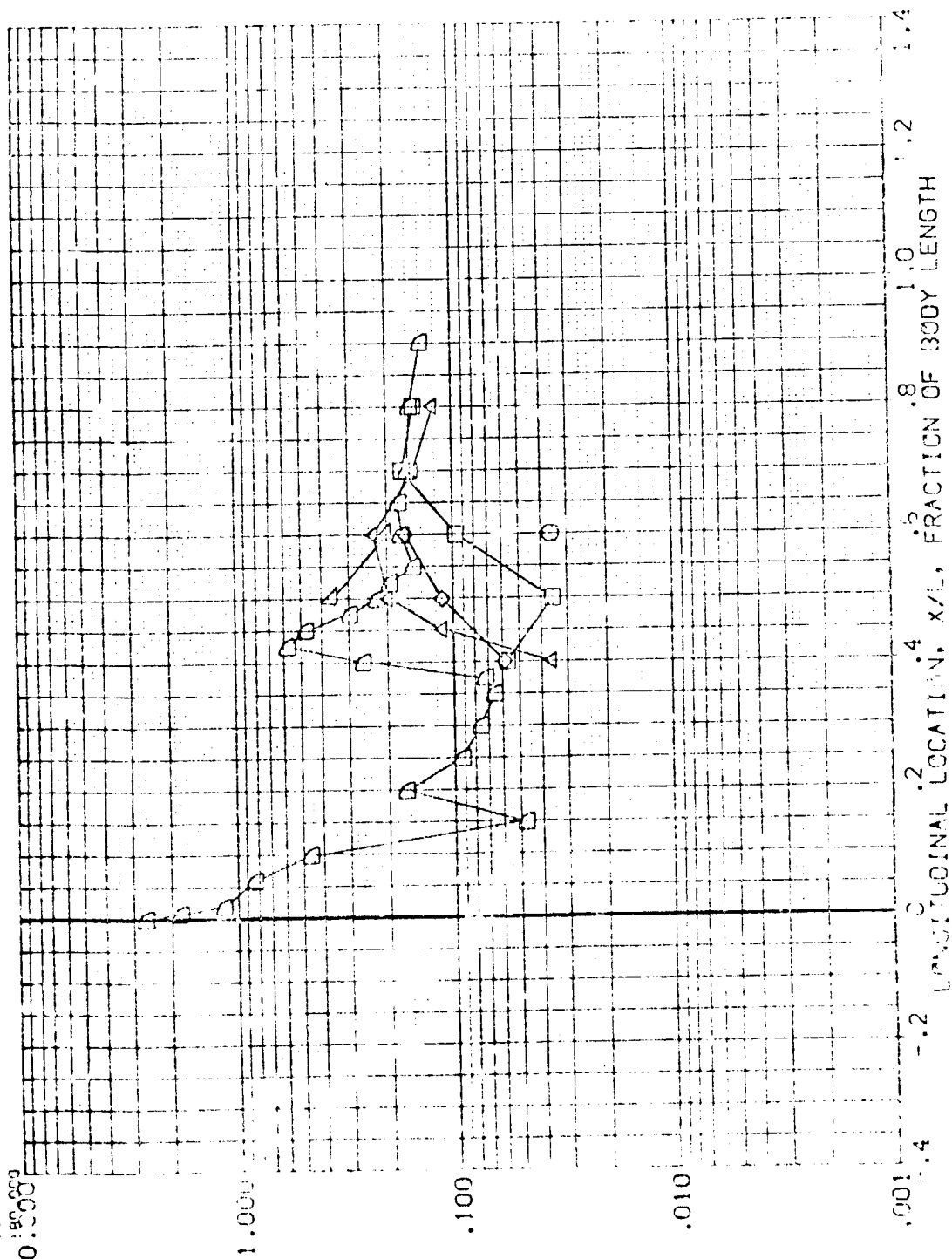


FIG 18 POSITION + ET - ET DATA - SMALL TANKS

IH18 310C507W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .031

SYMBOL PHI HAV/HT RN/L
 10.000 67.500 .850 4.424
 90.000 90.000
 112.500
 135.000
 157.500
 180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

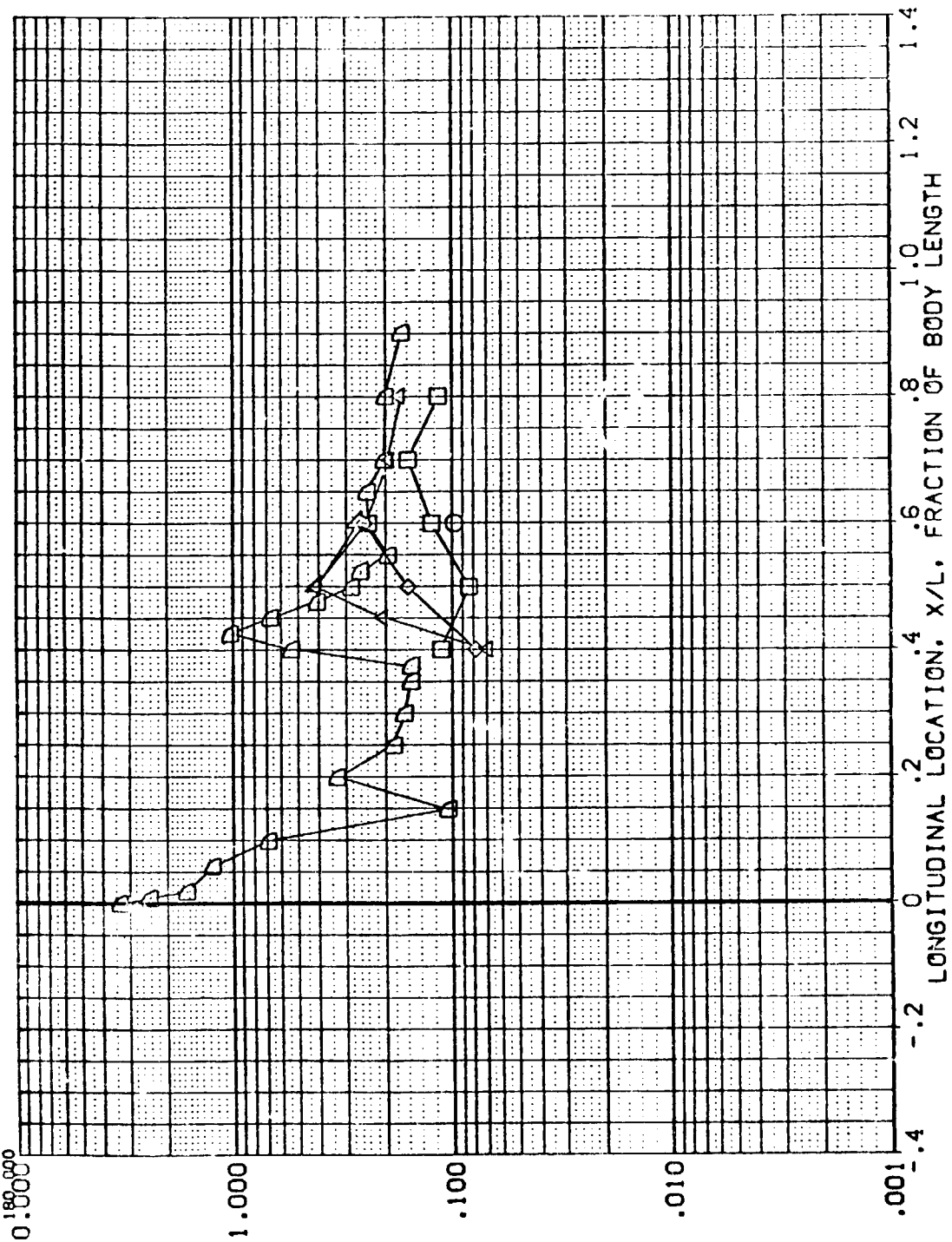


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .031

SYMBOL PHI HAW/HT RN/L
 67.500 .900 4.424
 90.000
 112.500
 135.000
 157.500
 180.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

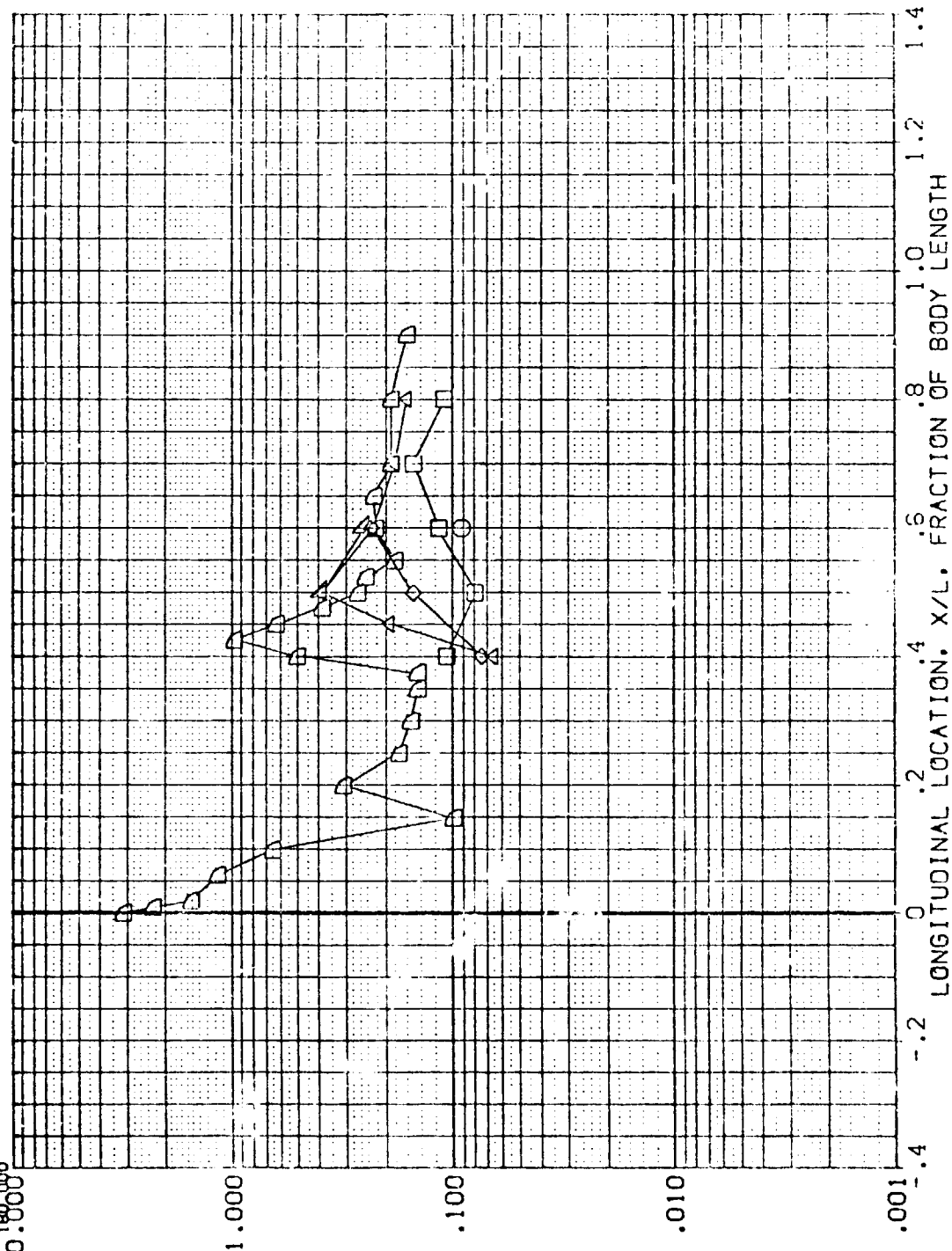


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL	PHI	HAW/HT	RN/L	ALPHA	MACH	X-HT	PARAMETRIC VALUES
□	67.500	1.000	4.424	-5.000	6.000	.031	BETA
◇	90.000						DELTA
▽	112.500						
▽	135.000						
▽	157.500						
▽	180.000						
							.000
							.175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

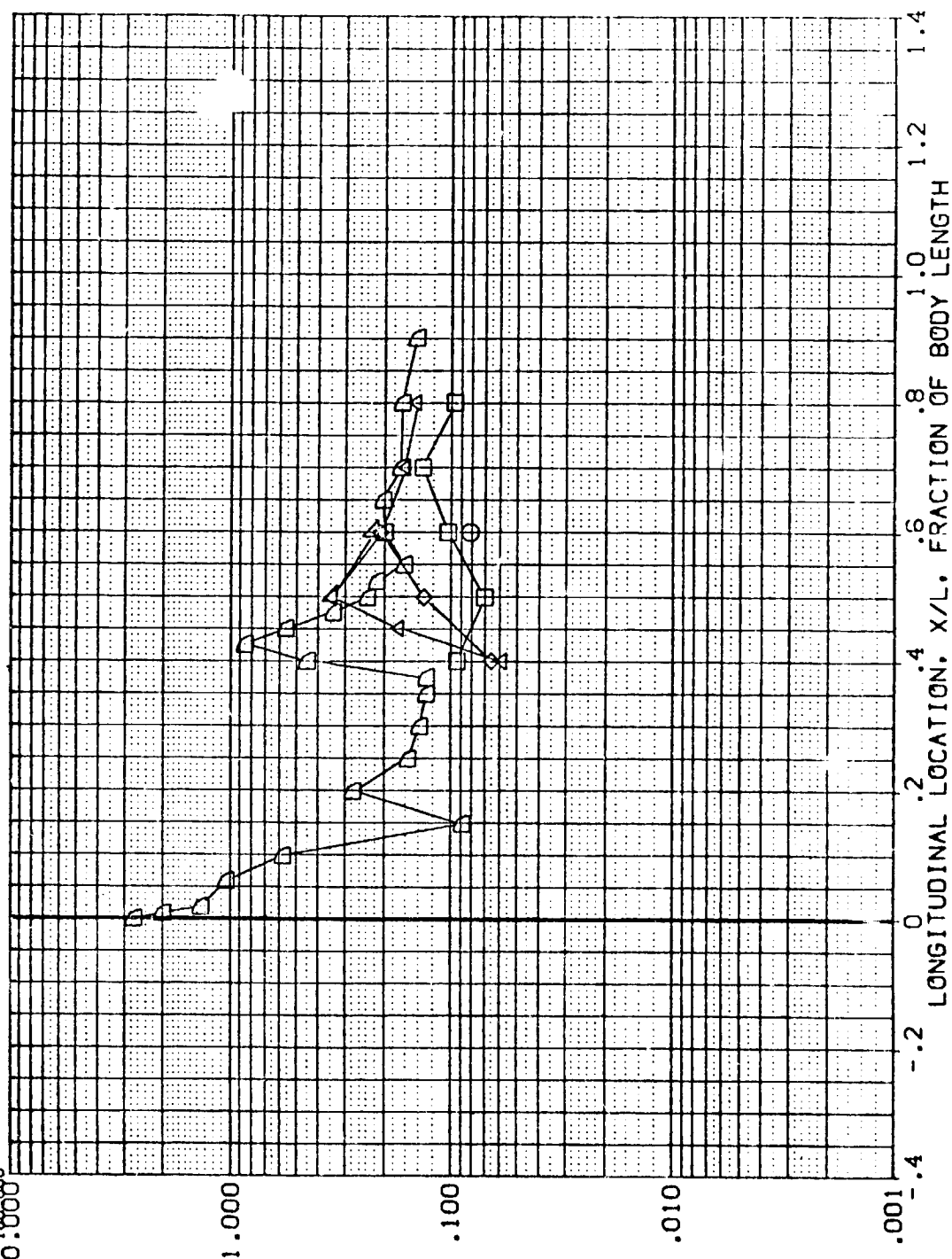


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RDM12) 8 B10C507N87M3F4V5 T8 X26 EXTERNAL TANK
 (RDM15) 8 B10C507N87M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

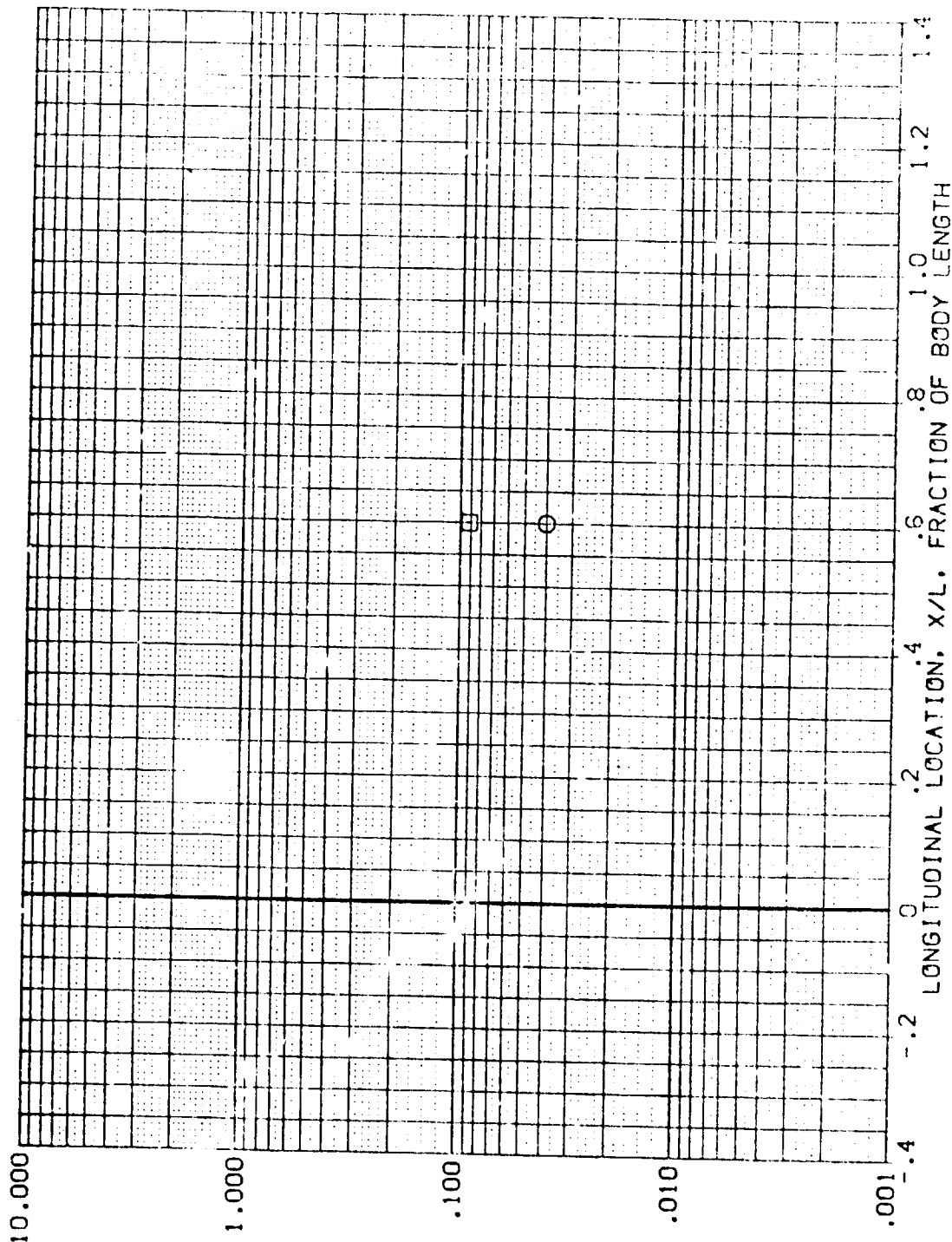


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

$RN/L = 4.643$ $h_{REF}/h_{REF} = .850$ $h_{REF} = 67.500$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT12) I119 910C507W87M3F4V5 T8 X26 EXTERNAL TANK
 (RQMT19) I118 810C507W87M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

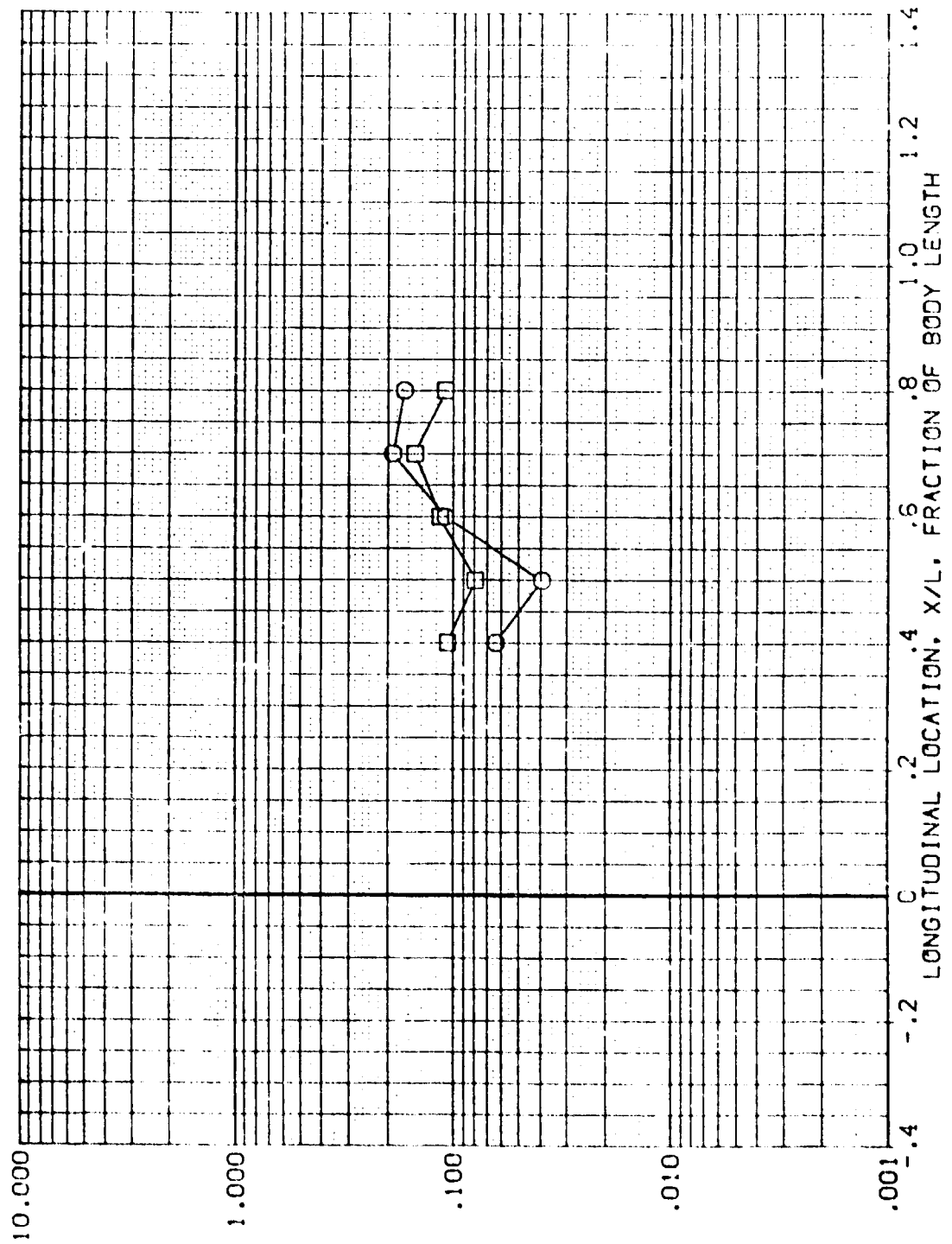


FIG 18 CRBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 $h_{AW}/h_T = .850$ $PH = 90.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT12) 8 IH18 B10C50748743F4V5 TB X26 EXTERNAL TANK
 (RQMT19) 8 IH18 B10C50748743F4V5 TB X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

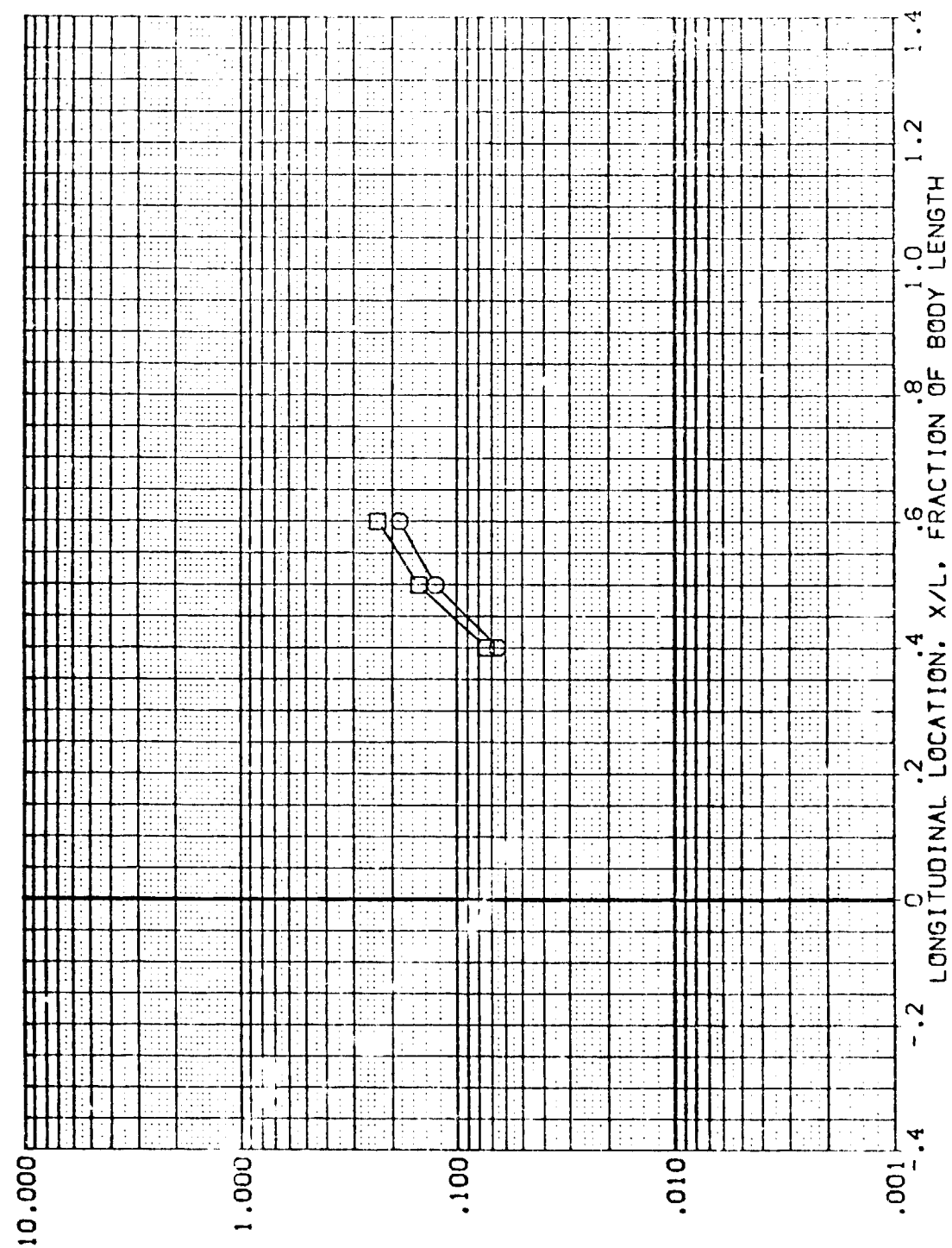




FIG 18 CRBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 PHI = 112.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT12)  I118 810CSD7487M3F4V5 T8 X26 EXTERNAL TANK
 (R0MT19)  I118 810CSD7487M3F4V5 T8 X26 EXTERNAL TANK

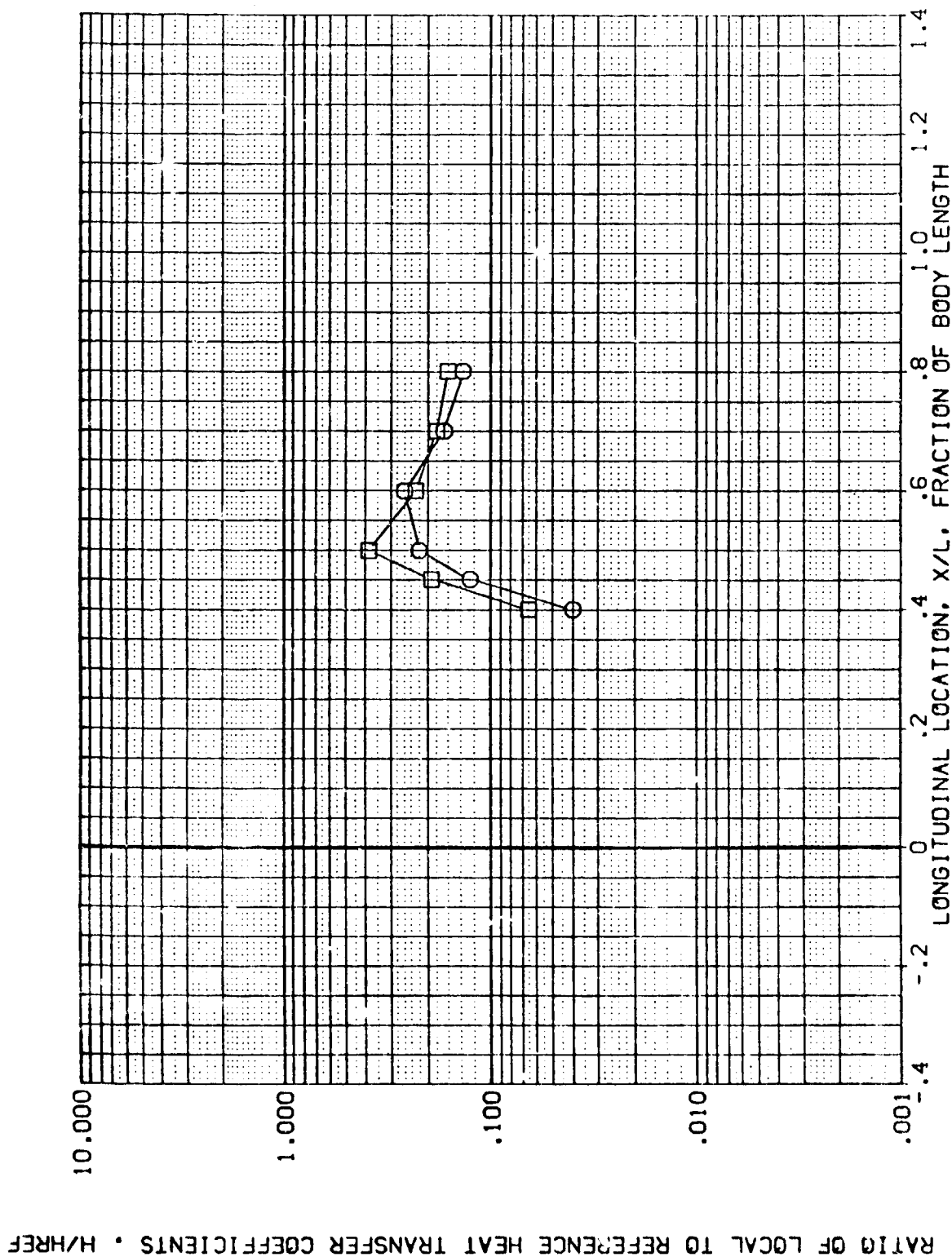


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 PHI = 135.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT12) B IM18 B10C507487M3F4V5 TB X26 EXTERNAL TANK
 (RMT19) IM18 B10C507487M3F4V5 TB X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

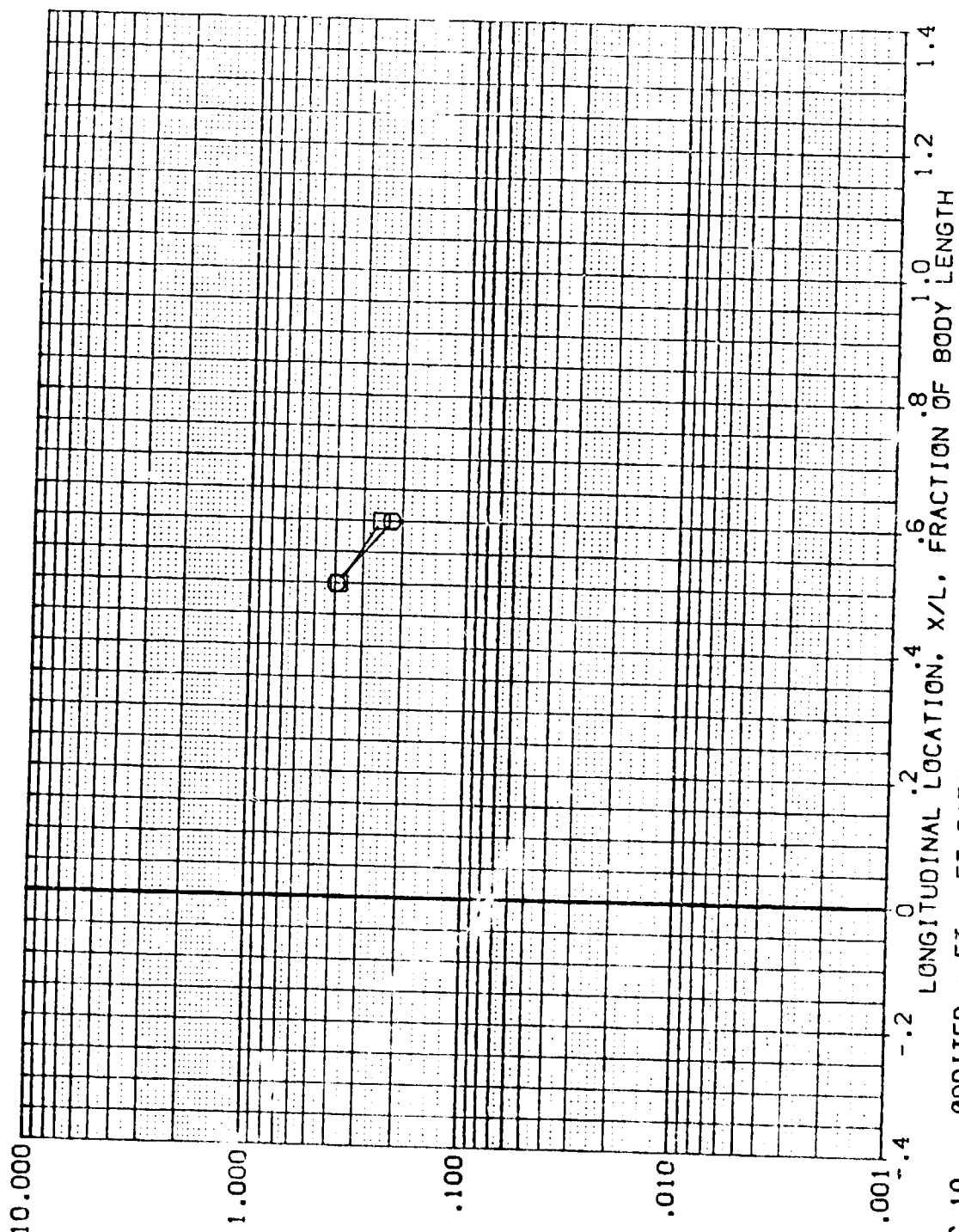


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RIGHT12) □ I-18 B10C5D7W87N3F4V5 T8 X26 EXTERNAL TANK
 (RIGHT19) □ I-18 B10C5D7W87N3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

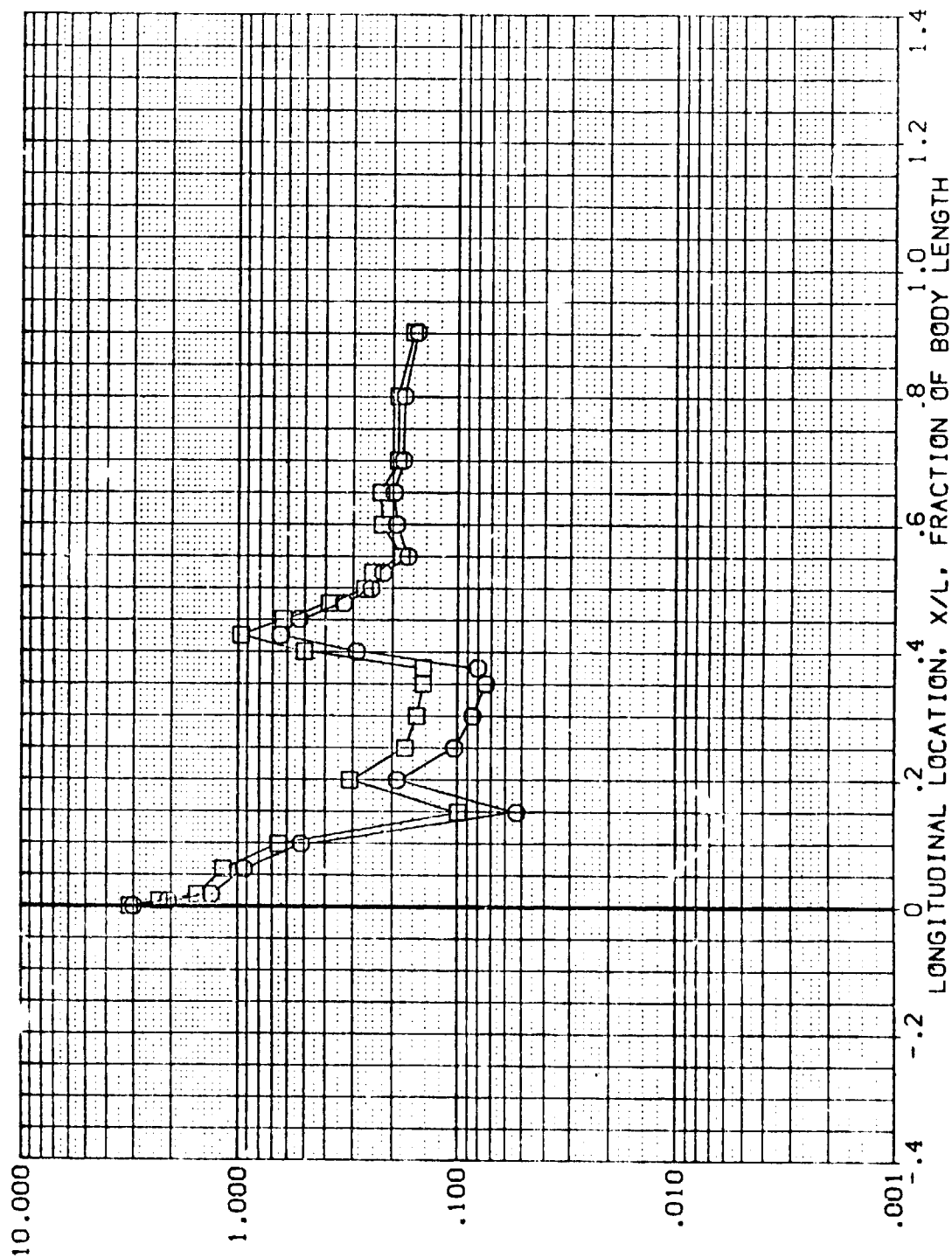


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 PHI = 180.000

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT12) IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK
 (RMT19) IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

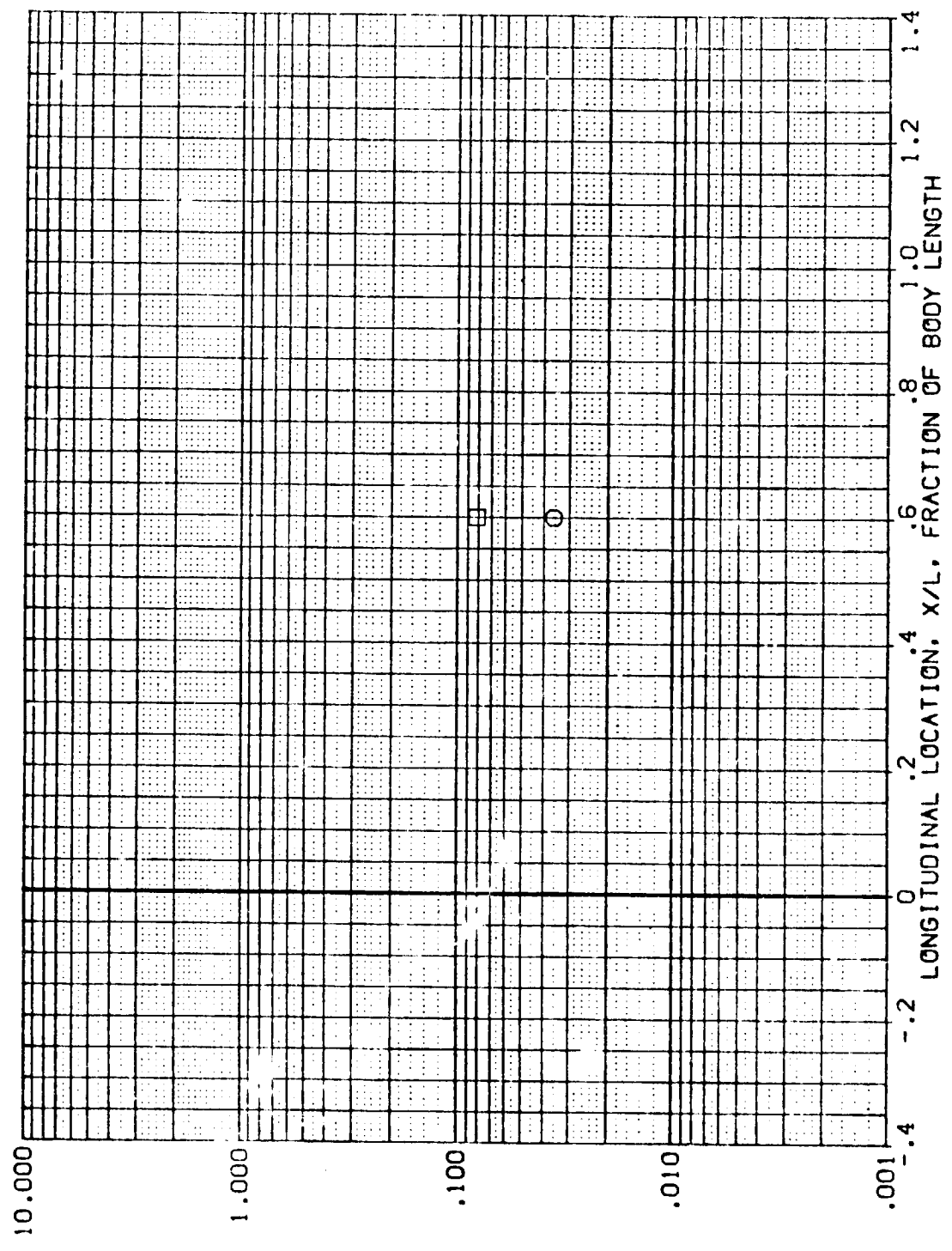


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 PHI = 67.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT12) B 1M18 B10C507W87M3F4V5 18 X26 EXTERNAL TANK
 (R0MT19) B 1M18 B10C507W87M3F4V5 19 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

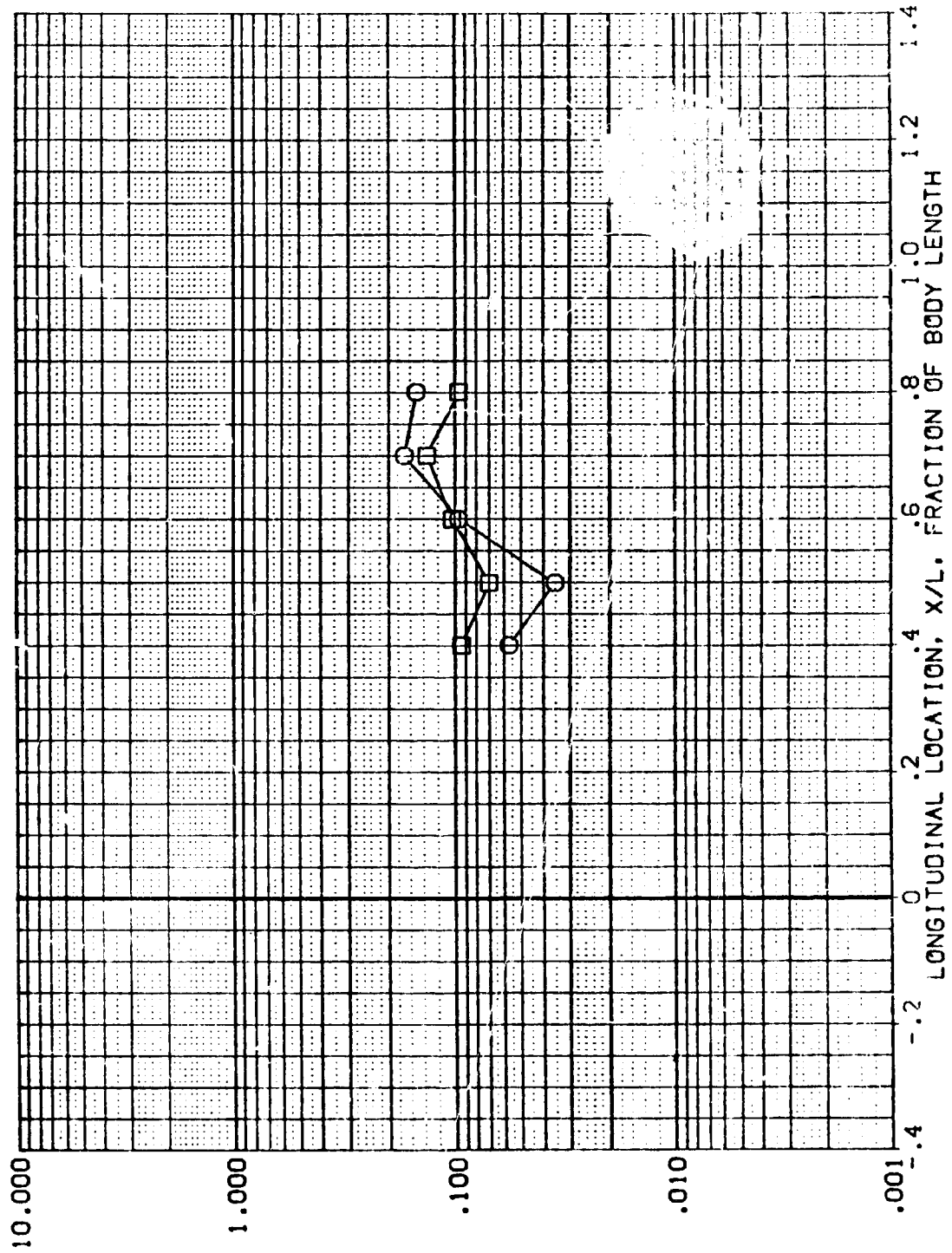


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 PHI = 90.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT12) [H18 B10C5D7V87H3F4V5 T8 X26 EXTERNAL TANK
 (RCHT19) [H18 B10C5D7V87H3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

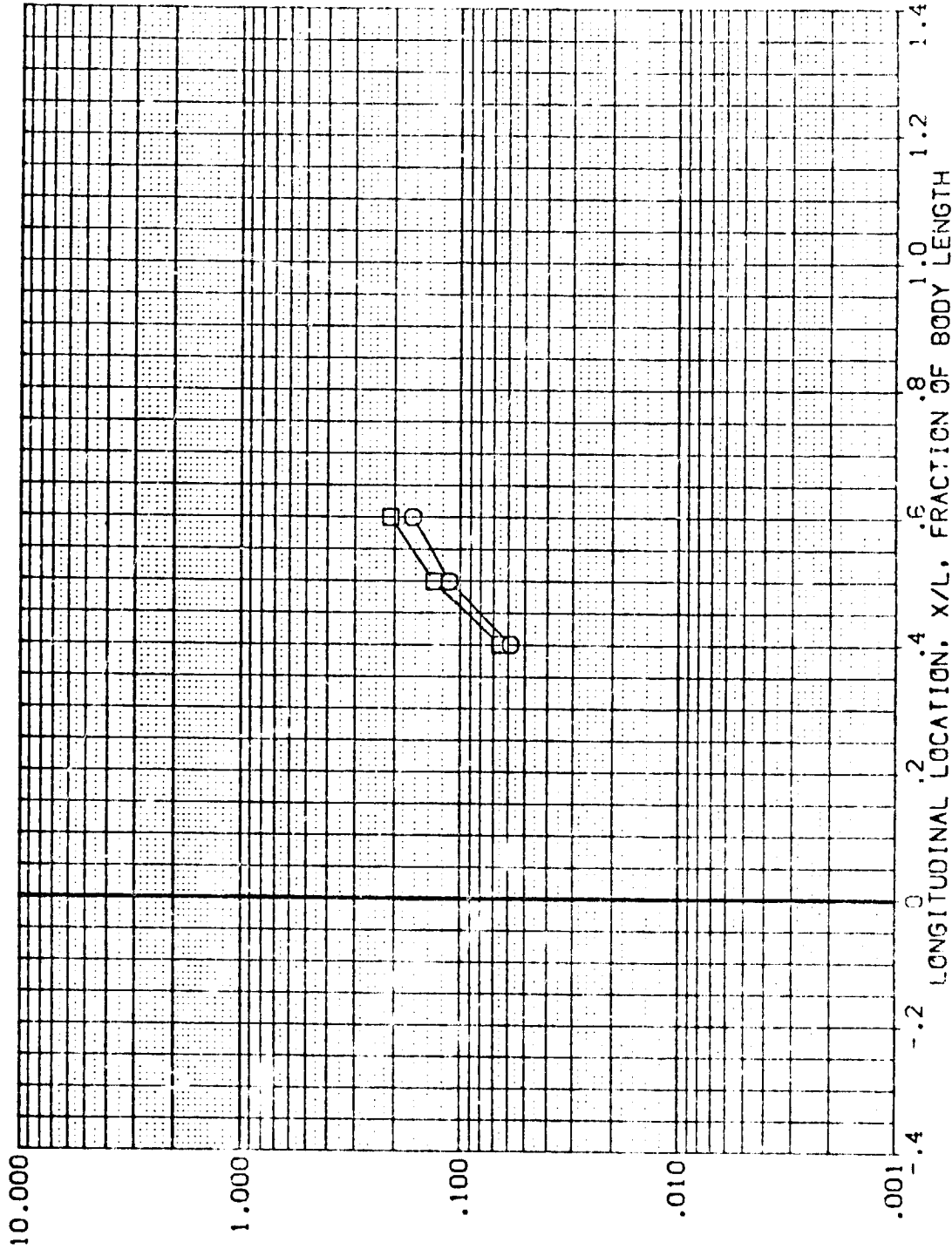


FIG 18 CRBITER + ET - ET DATA - SMALL TRIPS

$\gamma_{X/L} = 4.643$ $P_{AW}/HT = 1.000$ $\phi = 112.500$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RIGHT) 810C507W87M3F4V5 T8 X26 EXTERNAL TANK
 (LEFT) 810C507W87M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{ref}

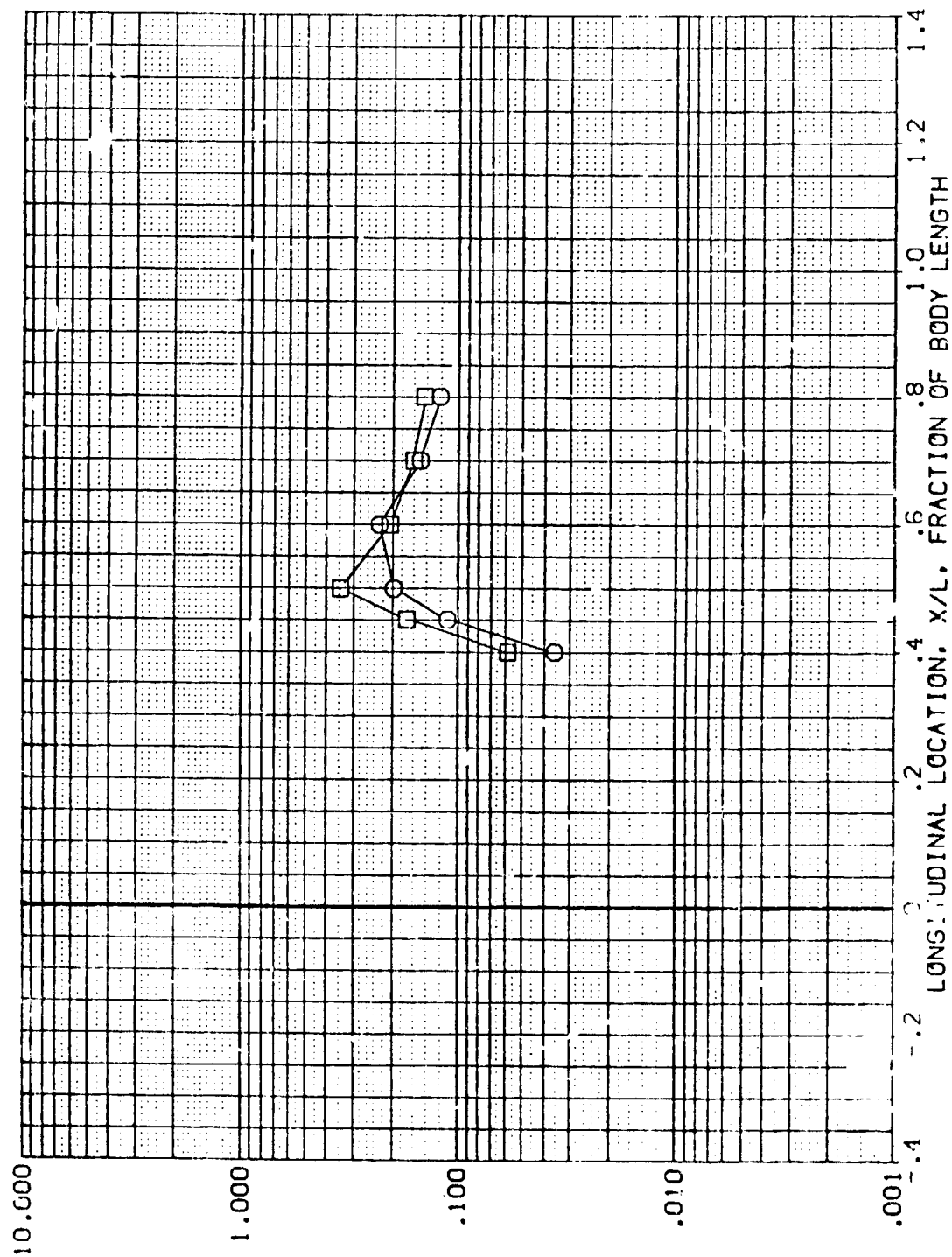


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 PHI = 135.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT12) 8 IHI8 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK
 (R0MT19) IHI8 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

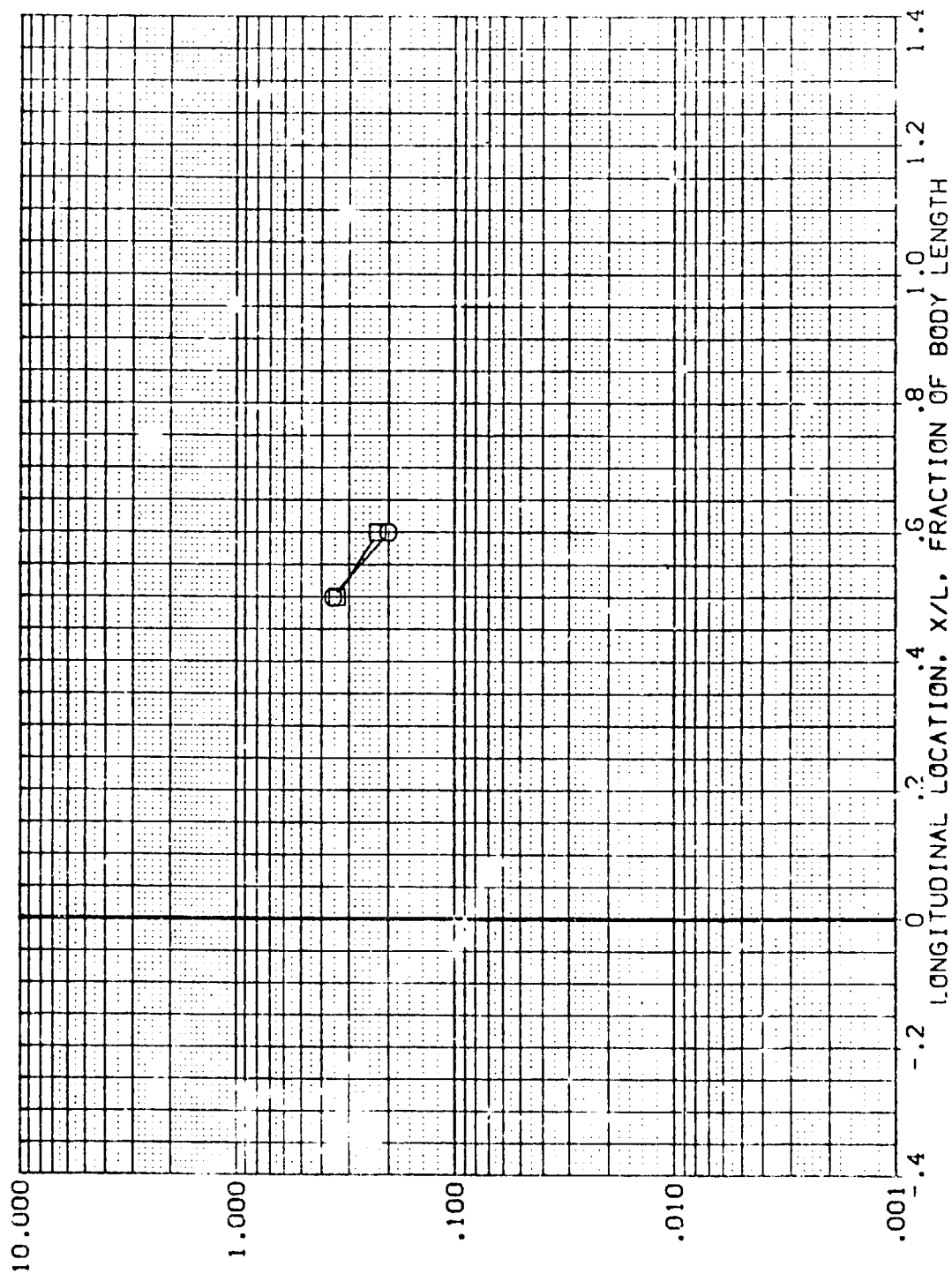


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT12) IHI8 BLOC507W87M3F4V5 T8 X26 EXTERNAL TANK
 (R0MT119) IHI8 BLOC507W87M3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

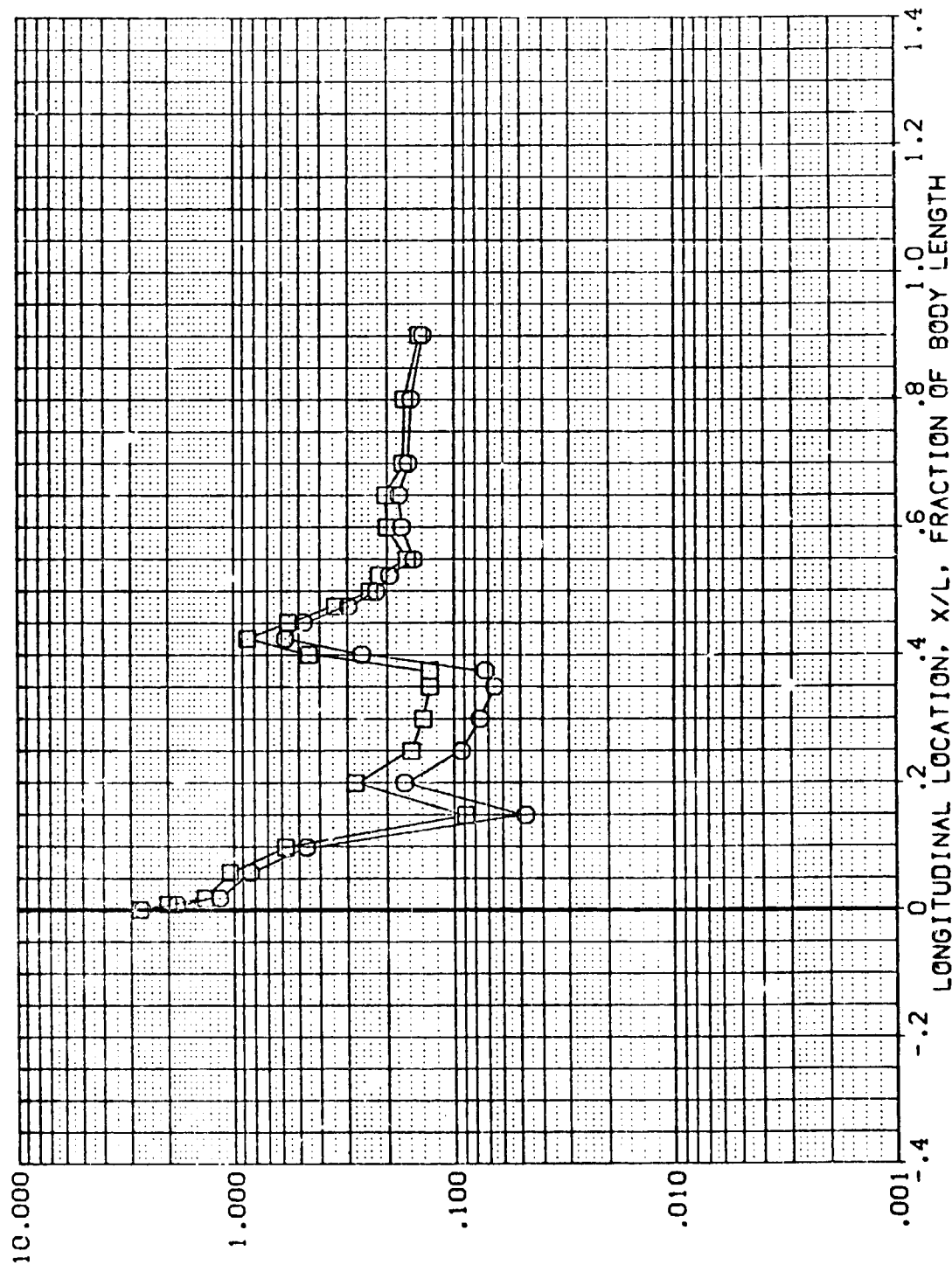


FIG 18 ORBITER + ET - ET DATA - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 PHI = 180.000

EXTERNAL TANK (RQMT16)

[H18 T8

PARAMETRIC VALUES
ALPHA .000
BETA .000
MACH 6.000

SYMBOL X/L HAM/HT RN/L
□ .000
◇ .010
◇ .020
◇ .060
◇ .100

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

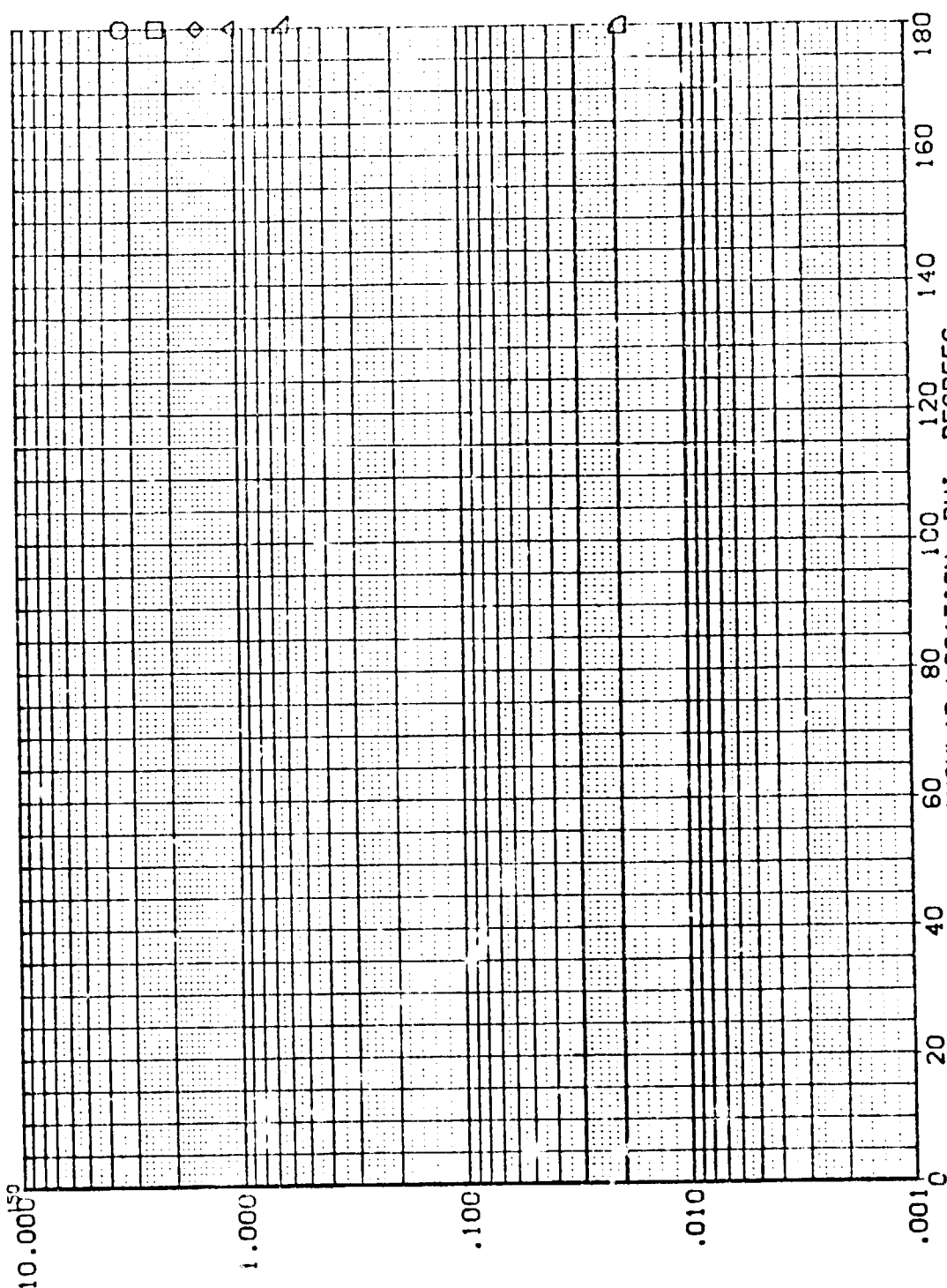


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT16)

IH18 T8

PARAMETRIC VALUES
 .030 ALPHA
 6.000 BETA
 .000

HAH/HT .850
 RN/L 4.569

SYMBOL X/L
 0.200
 0.250
 0.300
 0.350
 0.375
 0.400

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

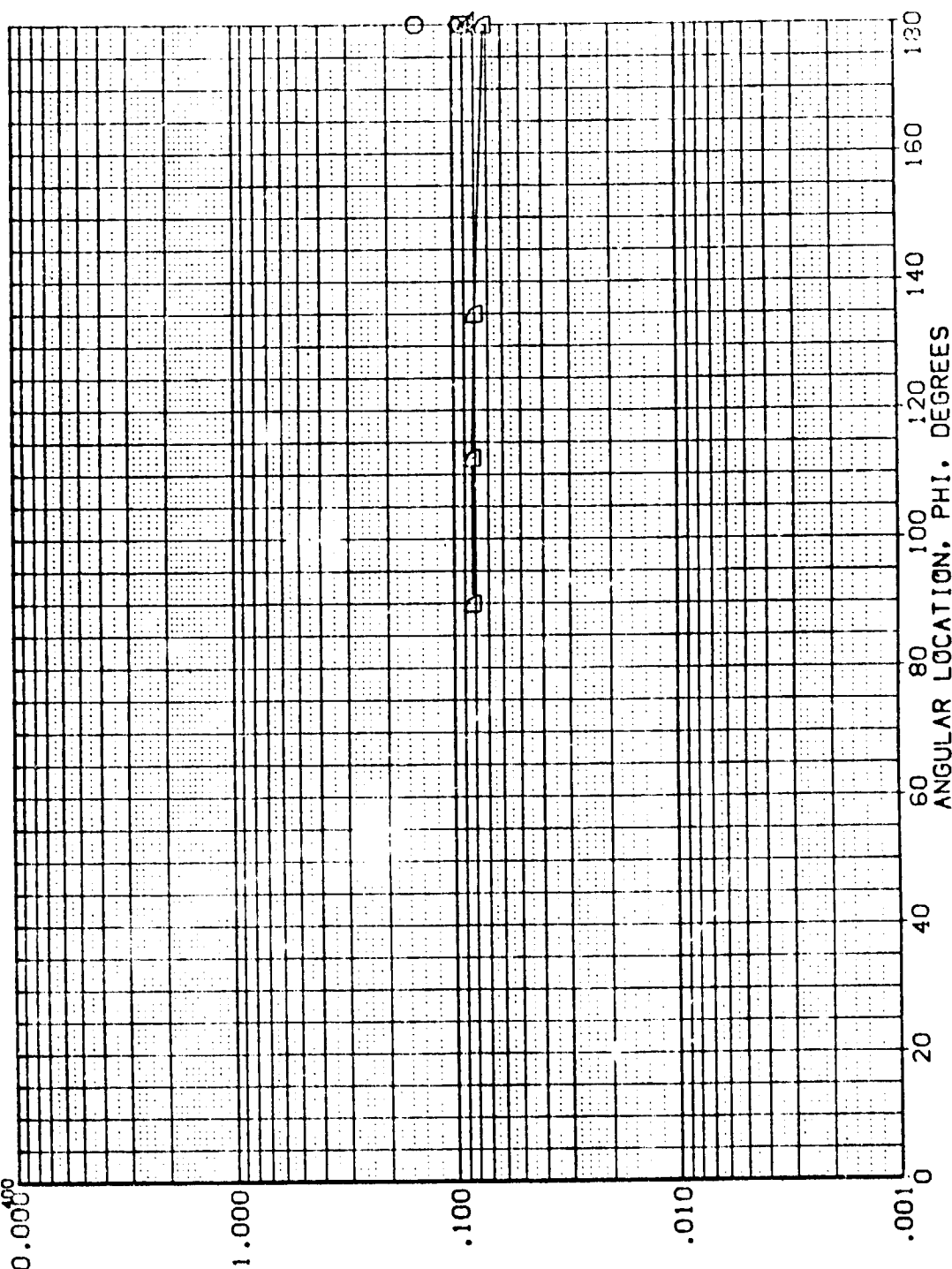


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

IH18 T8

EXTERNAL TANK (RQMT16)

SYMBOL X/L HAM/HT RN/L
 □ .425
 □ .450
 □ .475
 □ .500
 □ .525
 □ .550

PARAMETRIC VALUES
 ALPHA .000
 BETA 6.000
 MACH .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

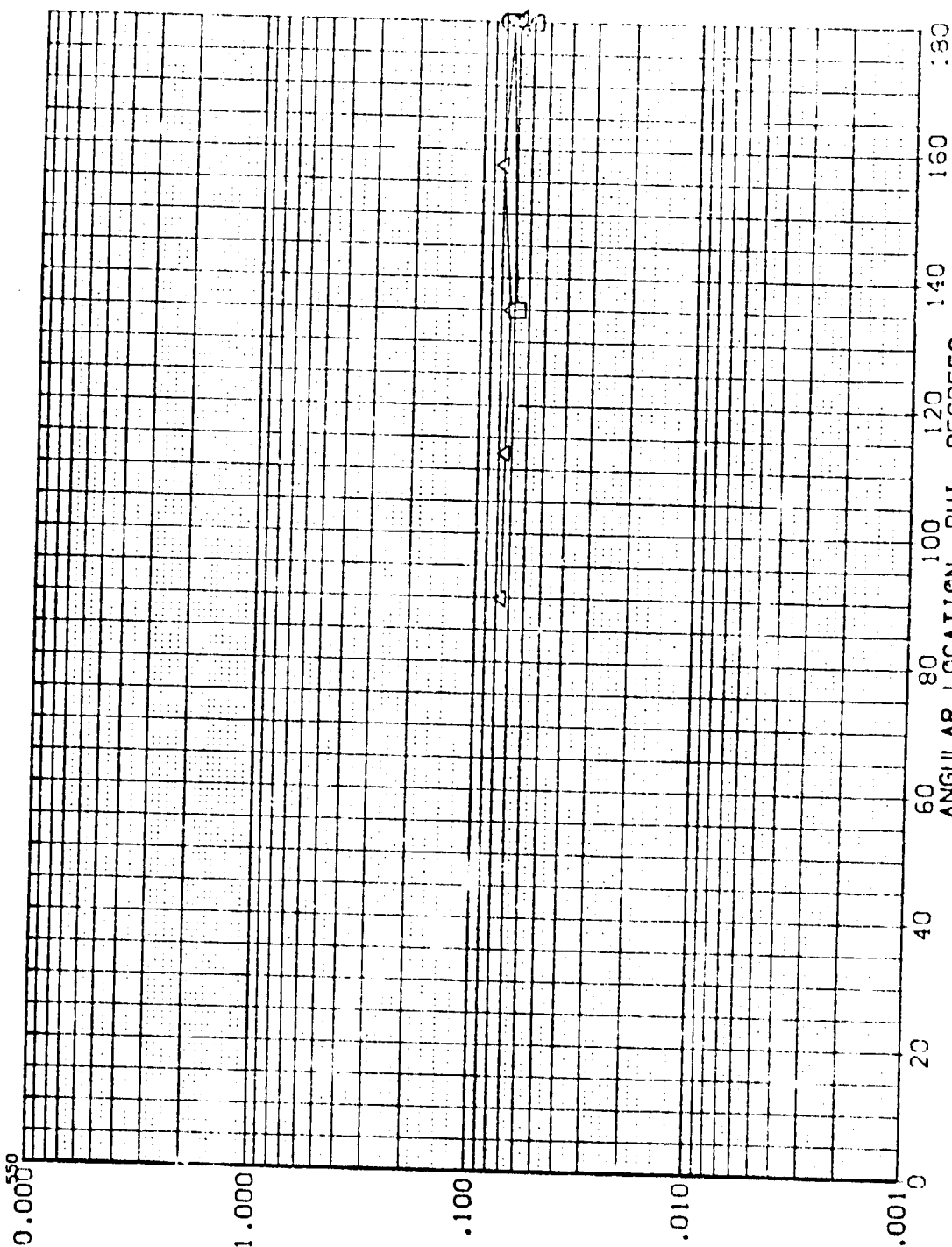


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS



EXTERNAL TANK (RQMT16)

PARAMETRIC VALUES

ALPHA .000 BETA .000

MACH 6.000

IH18 T8

SYMBOL X/L HAW/HT RW/L

.600 .850 4.569

.650

.700

.800

.900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

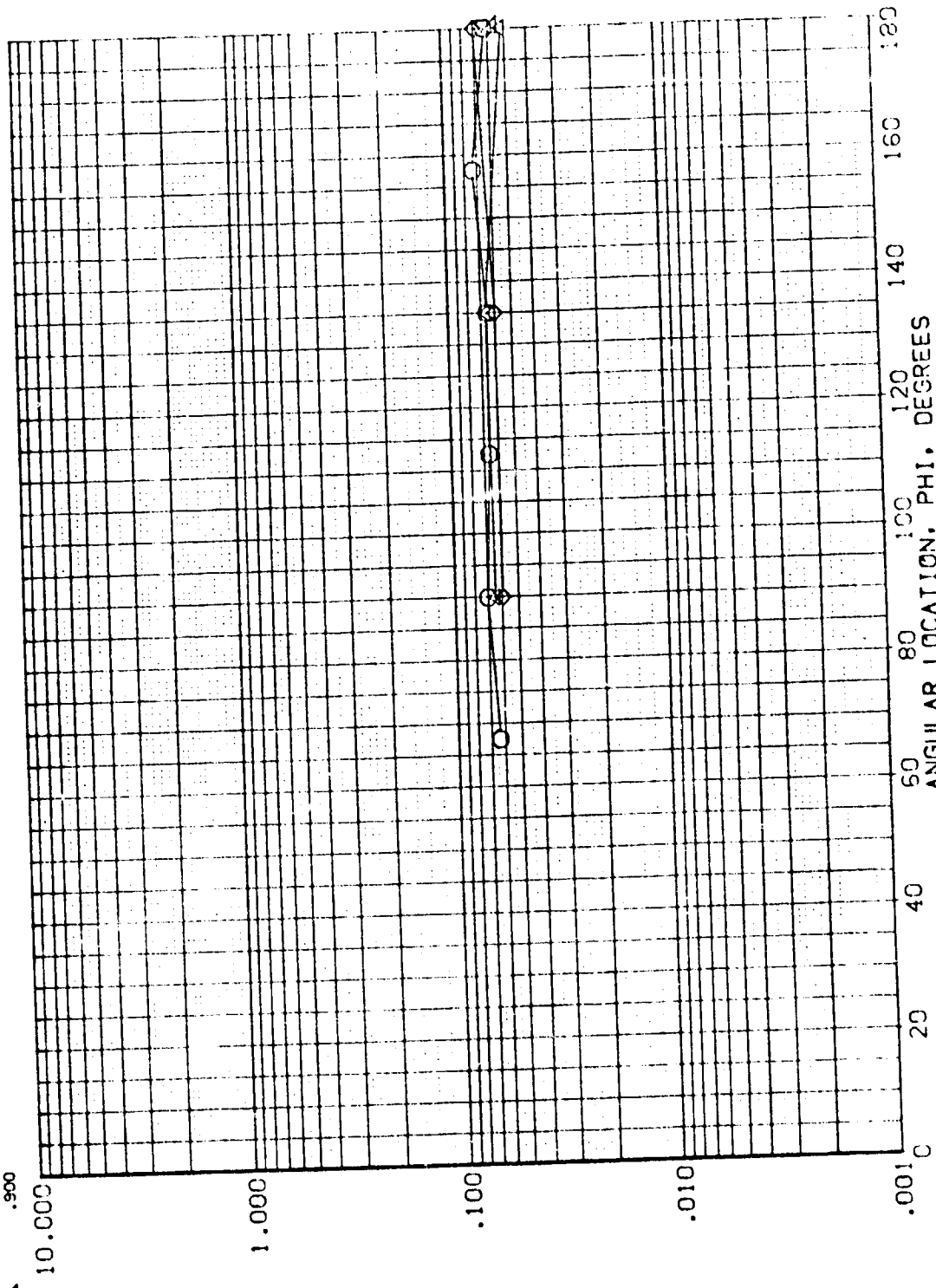


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT16)

1H18 18

PARAMETRIC VALUES
 .000 .000 .000
 .000 .000 .000
 6.000

ALPHA
 MACH

RN/L
 4.569

HAW/HT
 .900

X/L
 .000
 .010
 .020
 .060
 .100

SYMBOL
 0 1 2 3 4 5 6 7 8 9

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

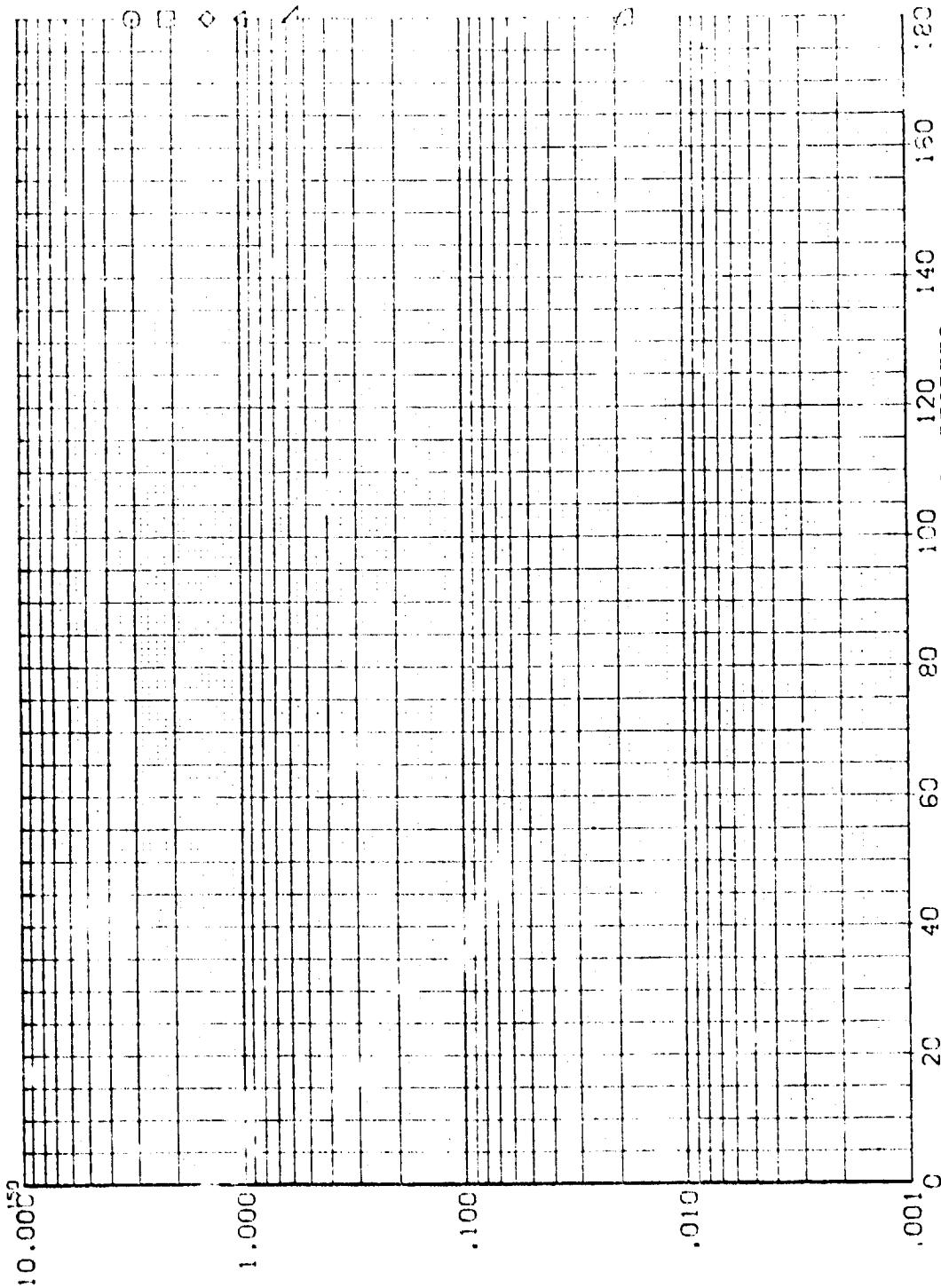


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

SYMBOL γ/L H^2W/RT RN/L α β γ
 0.200 0.500 4.569 0.000 0.000
 0.250 0.500 4.569 0.000 0.000
 0.300 0.500 4.569 0.000 0.000
 0.350 0.500 4.569 0.000 0.000
 0.375 0.500 4.569 0.000 0.000

EXTERNAL TANK (RQMT16)

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

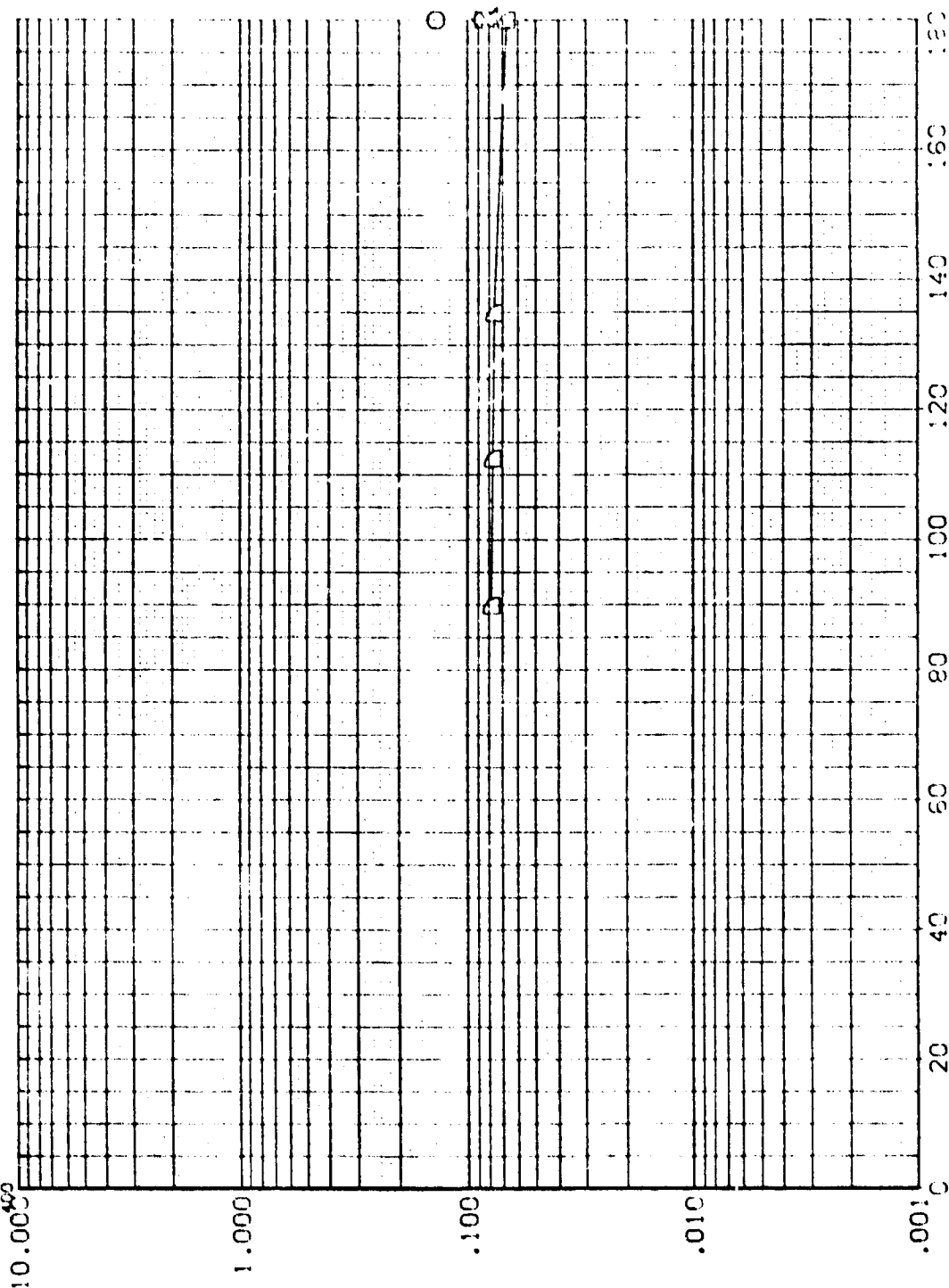


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT16)

IH18 18

SYMBOL X/L HAW/HT RN/L

.425
.450
.475
.500
.525

.900

4.569

PARAMETRIC VALUES
ALPHA
MACH

.000
6.000

.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

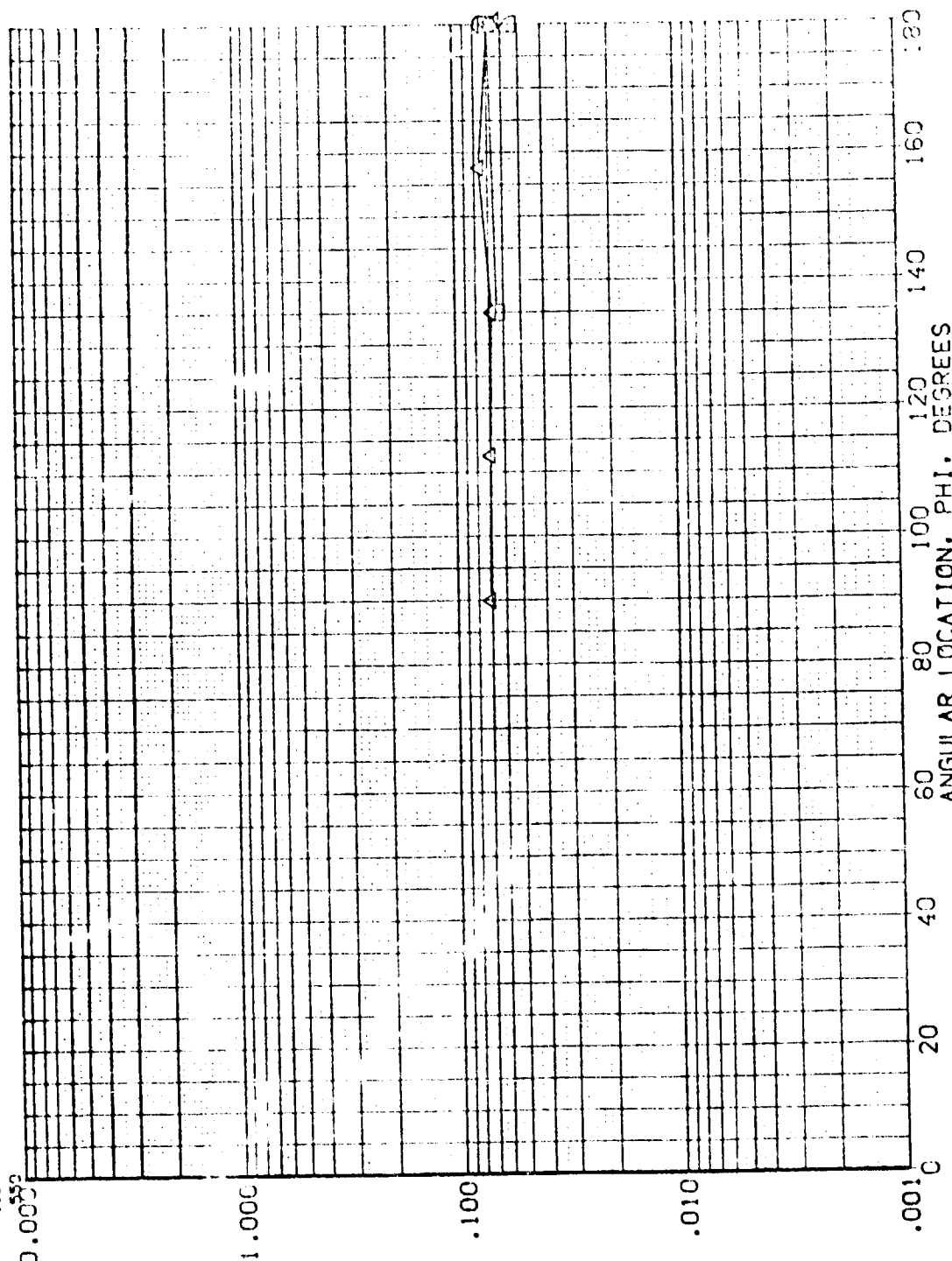


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

IH18 18
 EXTERNAL TANK (RQMT16)
 PARAMETRIC VALUES
 ALPHA .000
 BETA .000
 MACH 6.000
 X/L .600
 HAW/HY .900
 RN/L 4.569
 SYMBOL \square \diamond \square \square

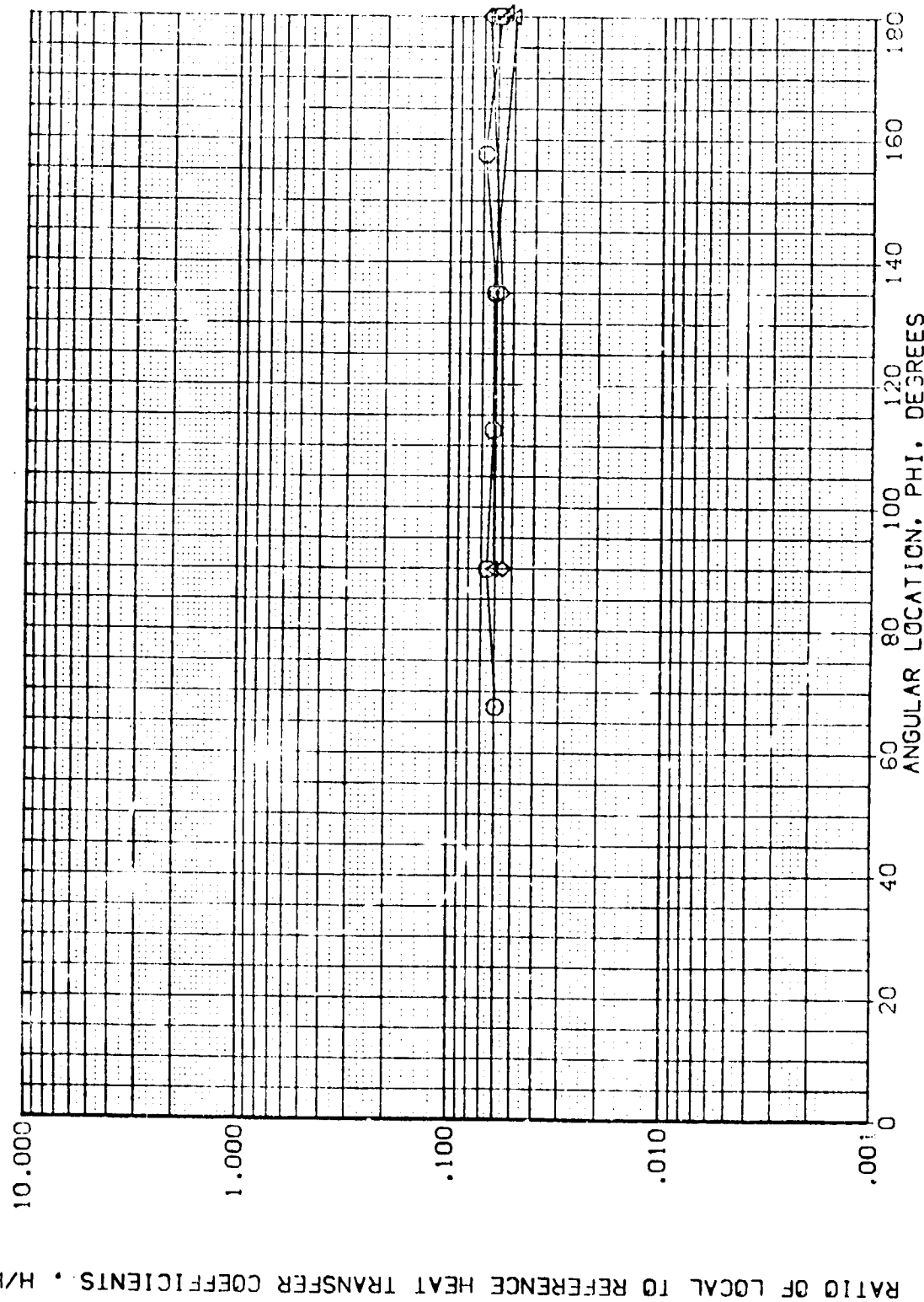


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

IH18 T8

EXTERNAL TANK (RQMT16)

SYMBOL X/L HAW/HT RN/L
 □ .000 1.000 4.569
 ▽ .010
 ◇ .020
 ◊ .060
 ◊ .100

PARAMETRIC VALUES
 .000 ALPHA
 6.000 MACH
 .000 BETA

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

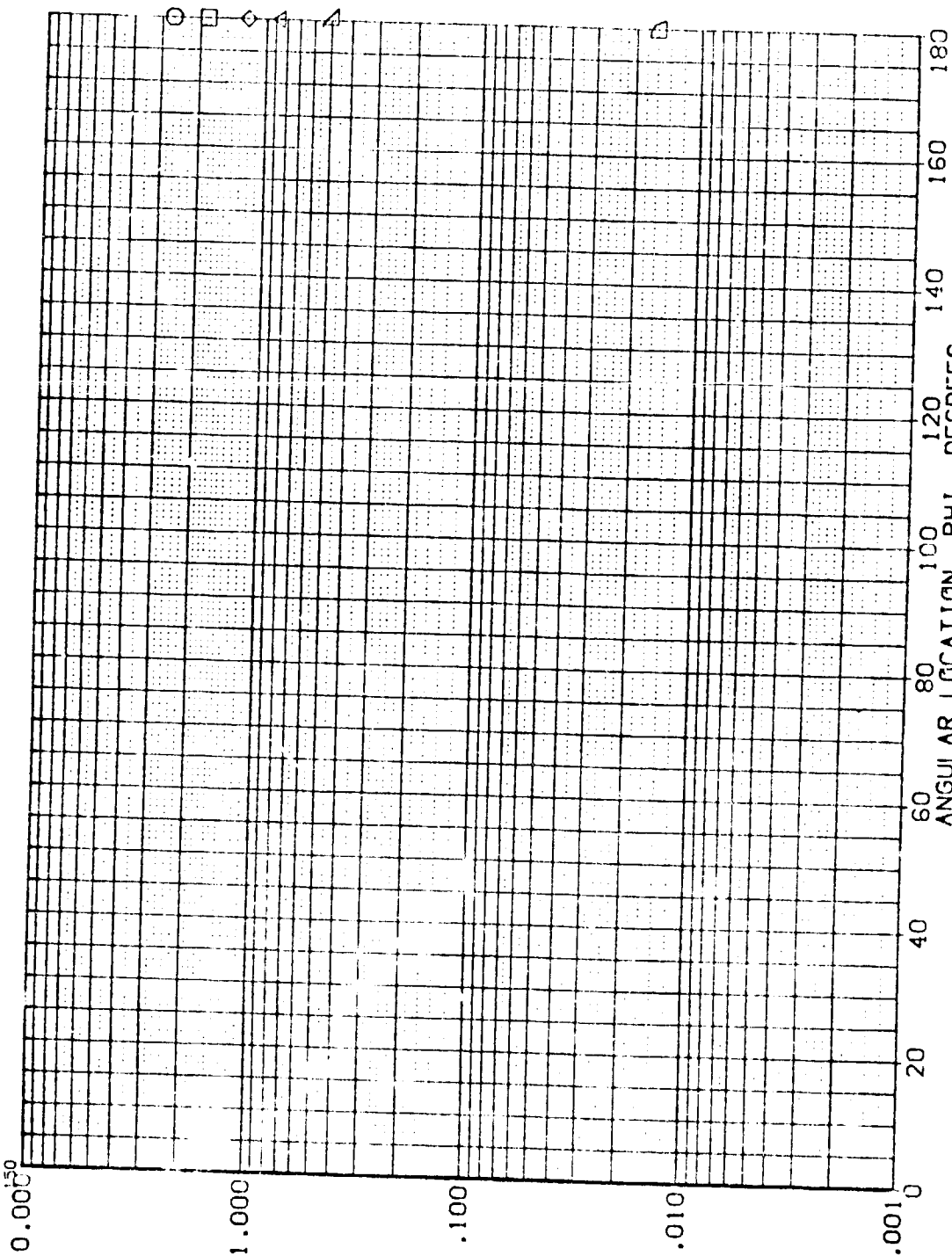


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT16)

PARAMETRIC VALUES
 ALPHA .000
 BETA .000
 MACH 6.000

IH18 T8

HAU/HT 1.000
 RN/L 4.569

SYMBOL X/L
 .200
 .250
 .300
 .350
 .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

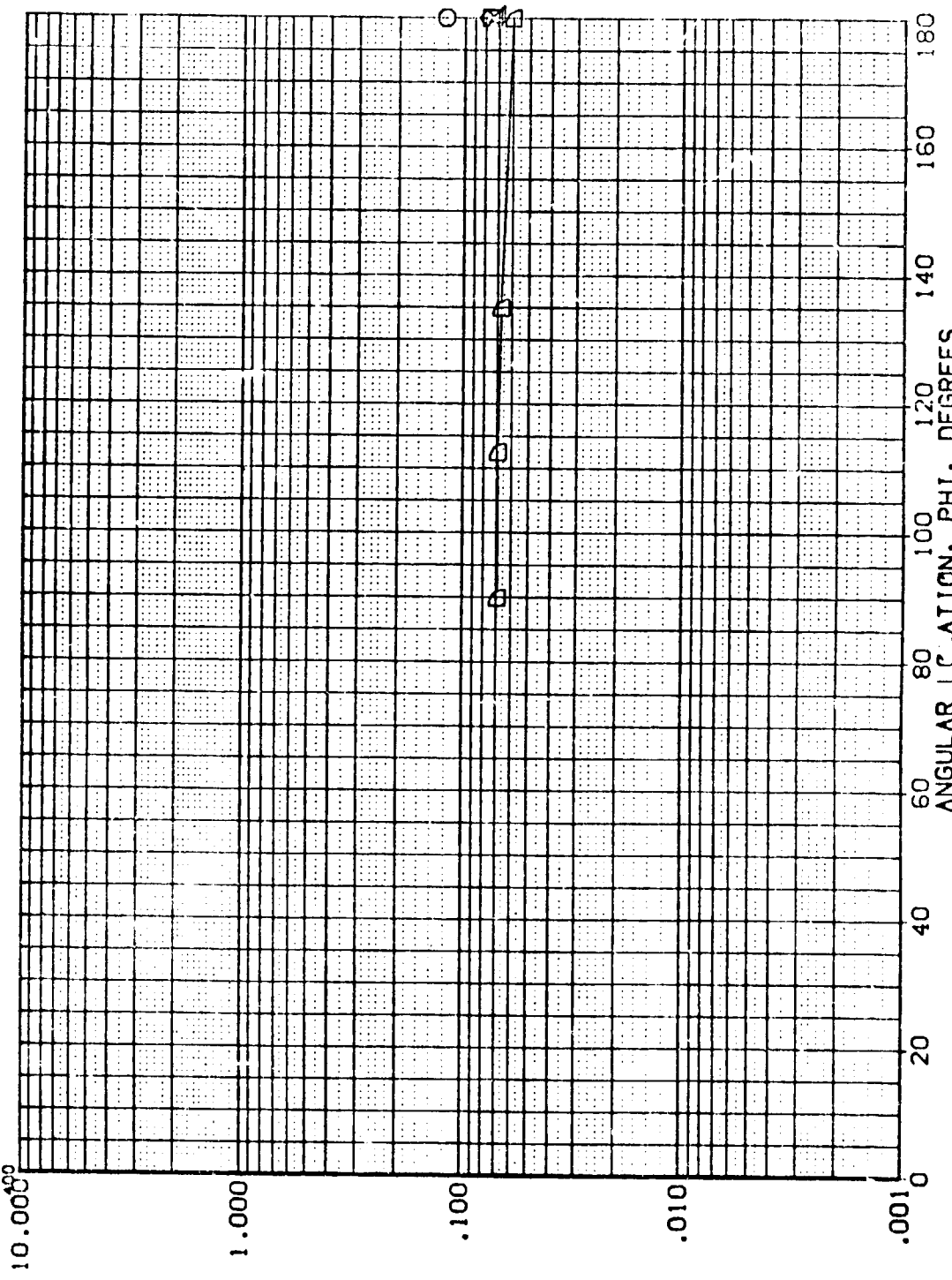


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

SYMBOL X/L HAW/HT RN/L
 □ .425 1.000 4.569
 □ .450
 □ .475
 □ .500
 □ .525
 □ .550

IH18 T8

EXTERNAL TANK (RQMT1E)

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

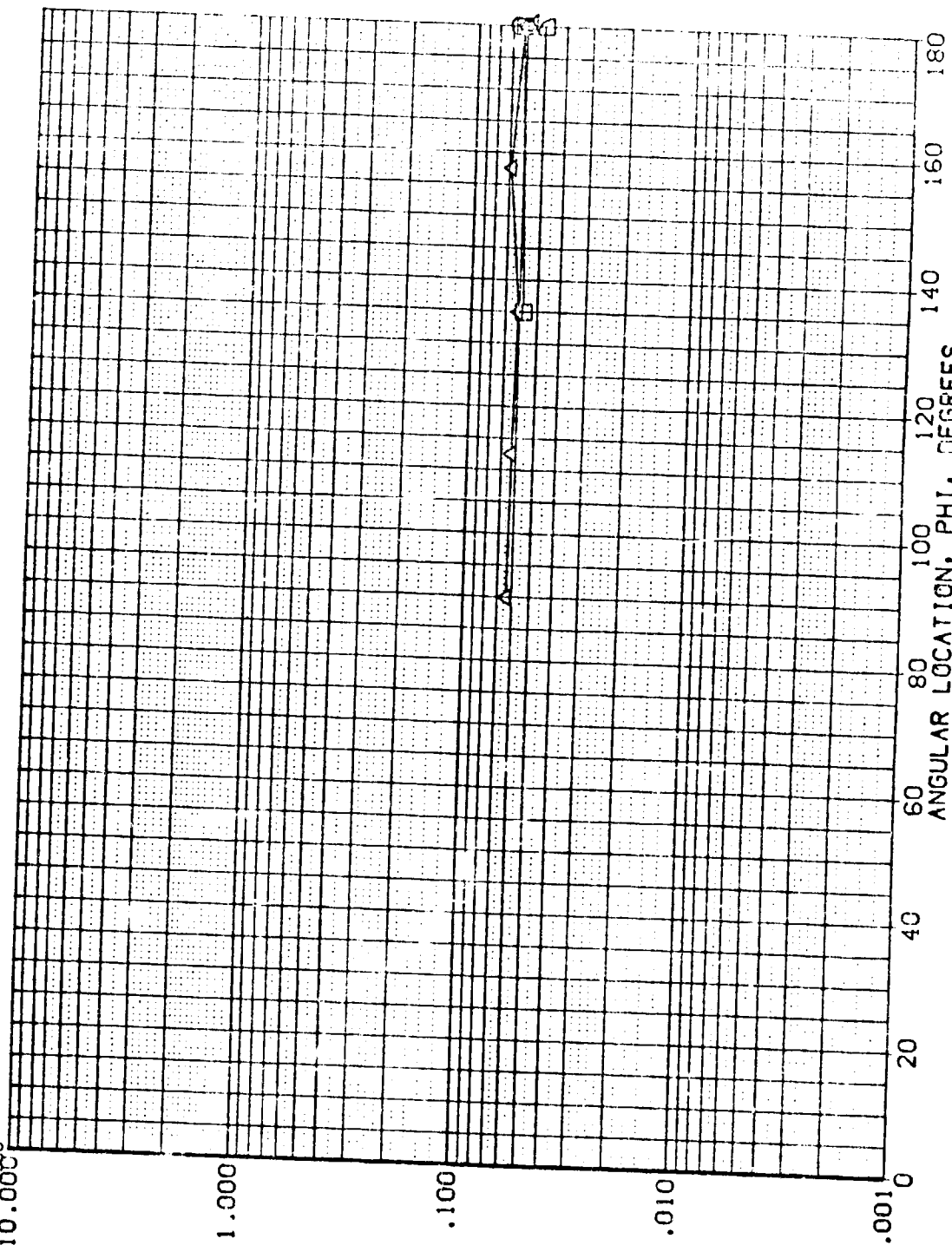


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

IH18 T8

EXTERNAL TANK (RQMT16)

SYMBOL

X/L

HAW/HT

RN/L

.600
.650
.700
.800
.900

1.000

4.569

PARAMETRIC VALUES

ALPHA
MACH

.000
6.000

.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

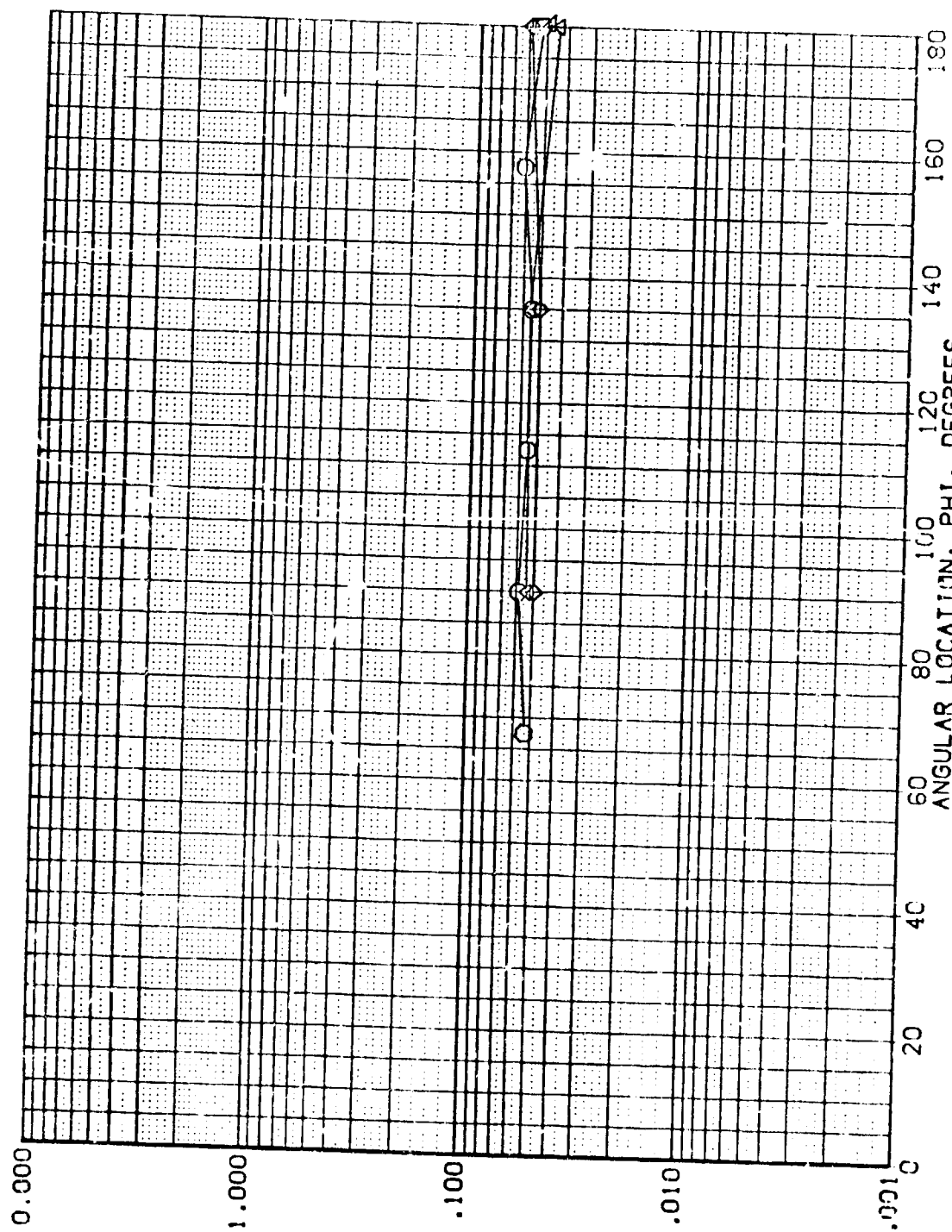


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

IH18 T8

EXTERNAL TANK (RQMT15)

PARAMETRIC VALUES
ALPHA MACH -5.000
BETA 6.000
.000

HAV/HT .850
RN/L 4.580

SYMBOL X/L
□ .000
◇ .010
◇ .020
◇ .060
◇ .100
◇ .150

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

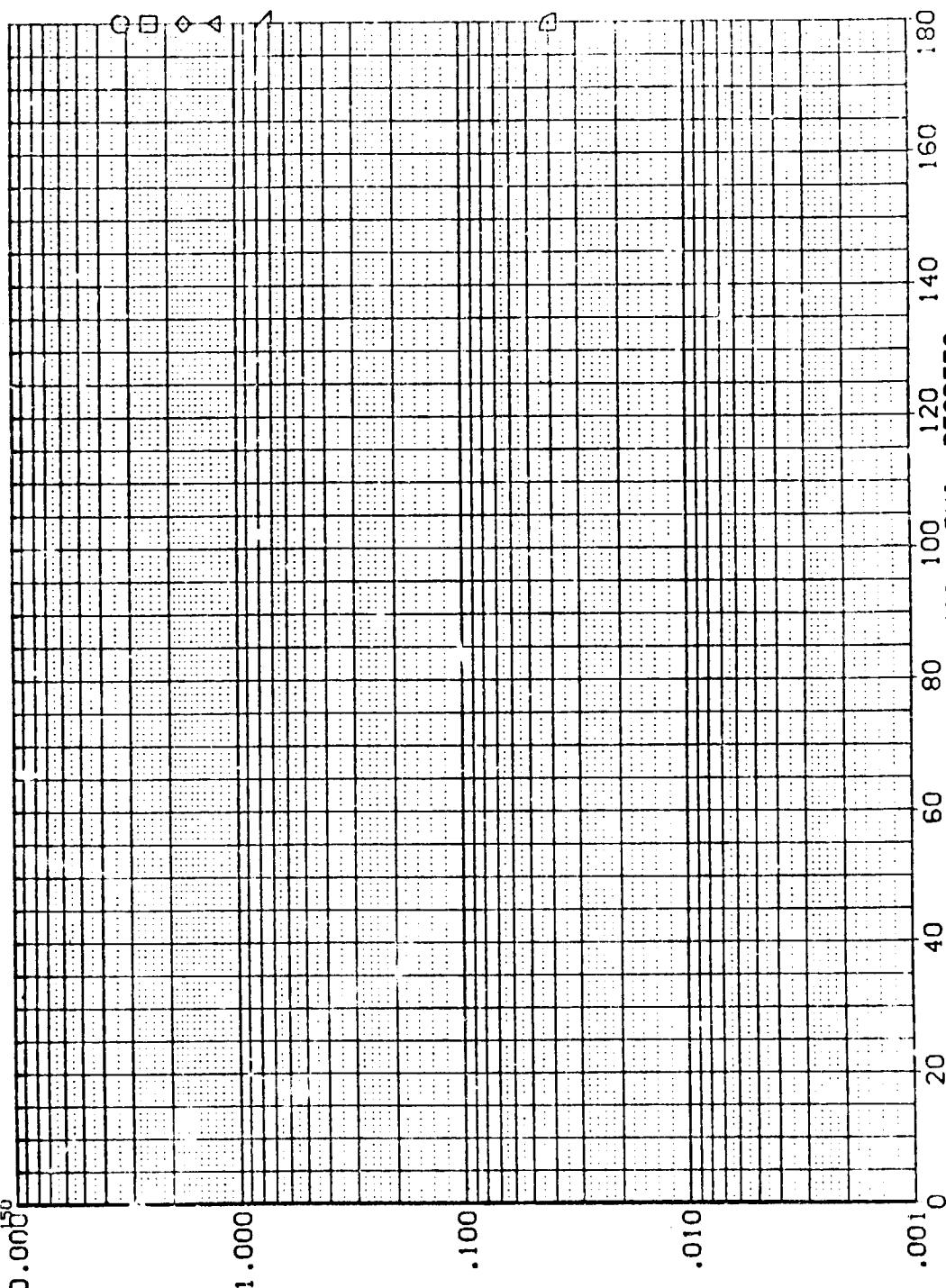


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

PARAMETRIC VALUES

PARAMETRIC VALUES	ALPHA	BETA
-5.000	6.000	.000

IH18 18
 HAW/HT .850
 RN/L 4.580
 X/L .200
 .250
 .300
 .350
 .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

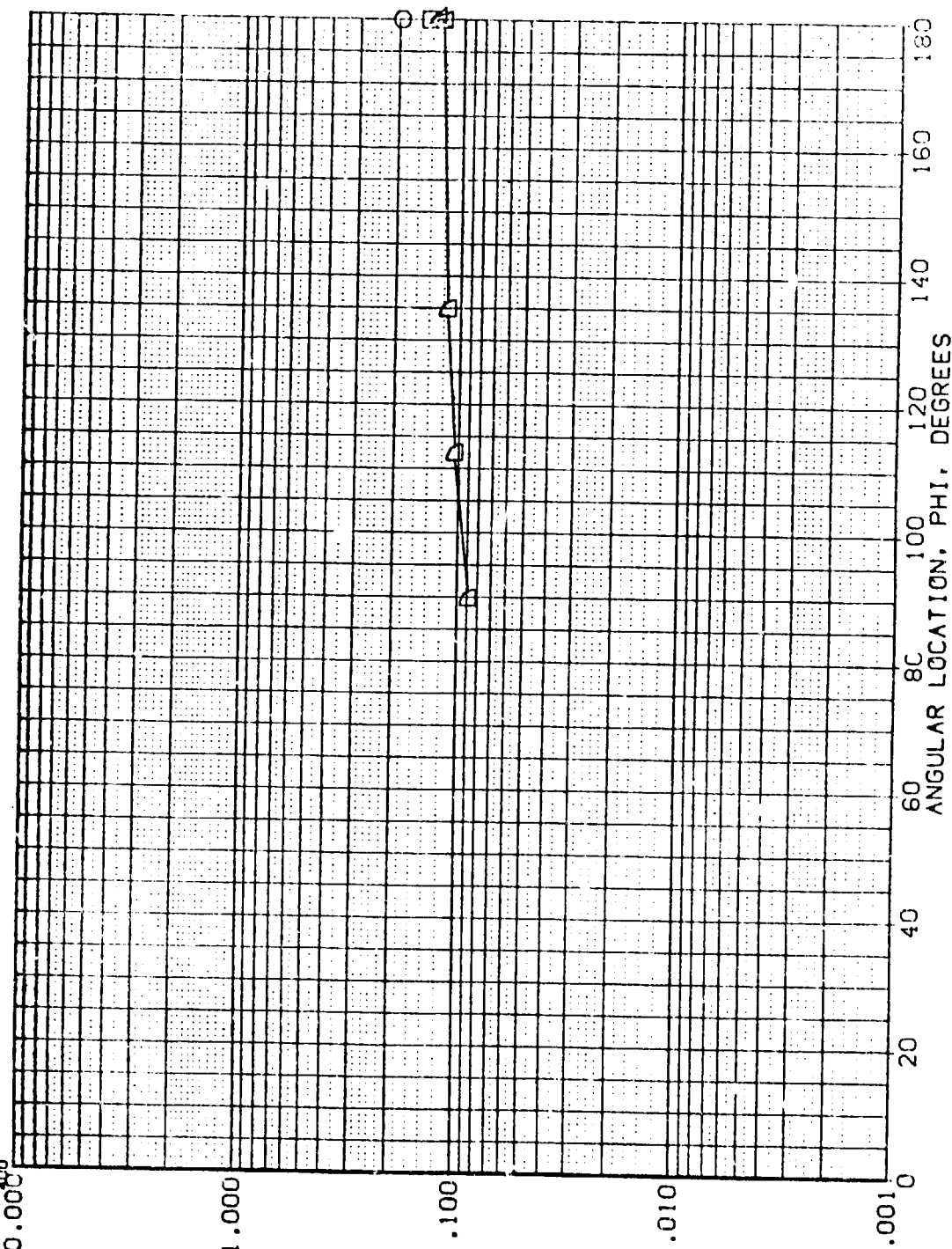


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

1H18 T8

PARAMETRIC VALUES
 ALPHA -5.000
 BETA 6.000
 MACH .000

HAH/HT .050
 RN/L 4.580

SYMBOL X/L
 □ .425
 ◇ .450
 ○ .475
 △ .500
 ▽ .525
 ○ .550

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

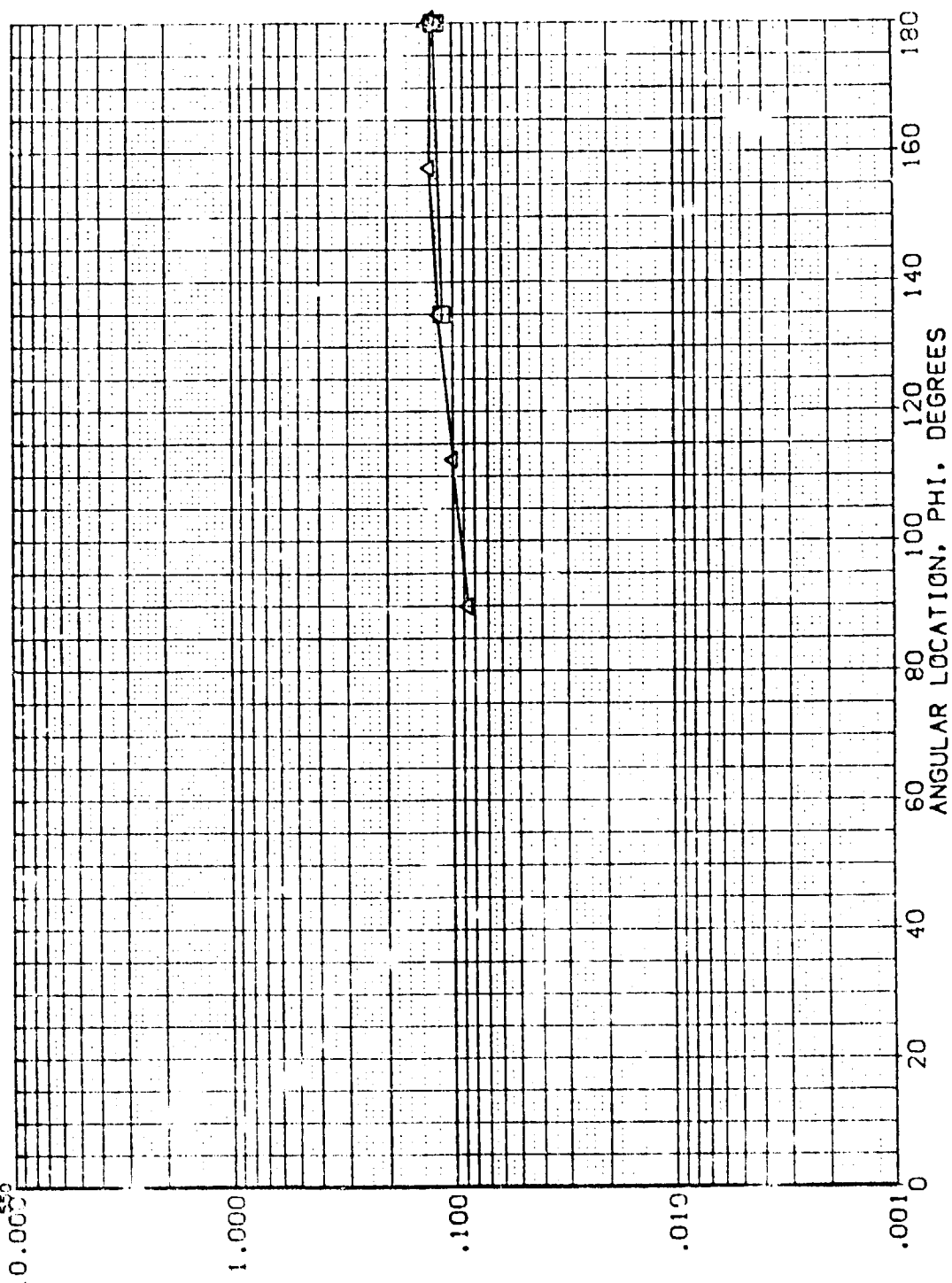


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

EXTERNAL TANK (R0MT15)

IH18 T8

PARAMETRIC VALUES
ALPHA HACH
BETA .000

HAH/HT .850
RN/L 4.580

SYMBOL X/L
◇ .600
□ .650
◇ .700
◇ .800
◇ .900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

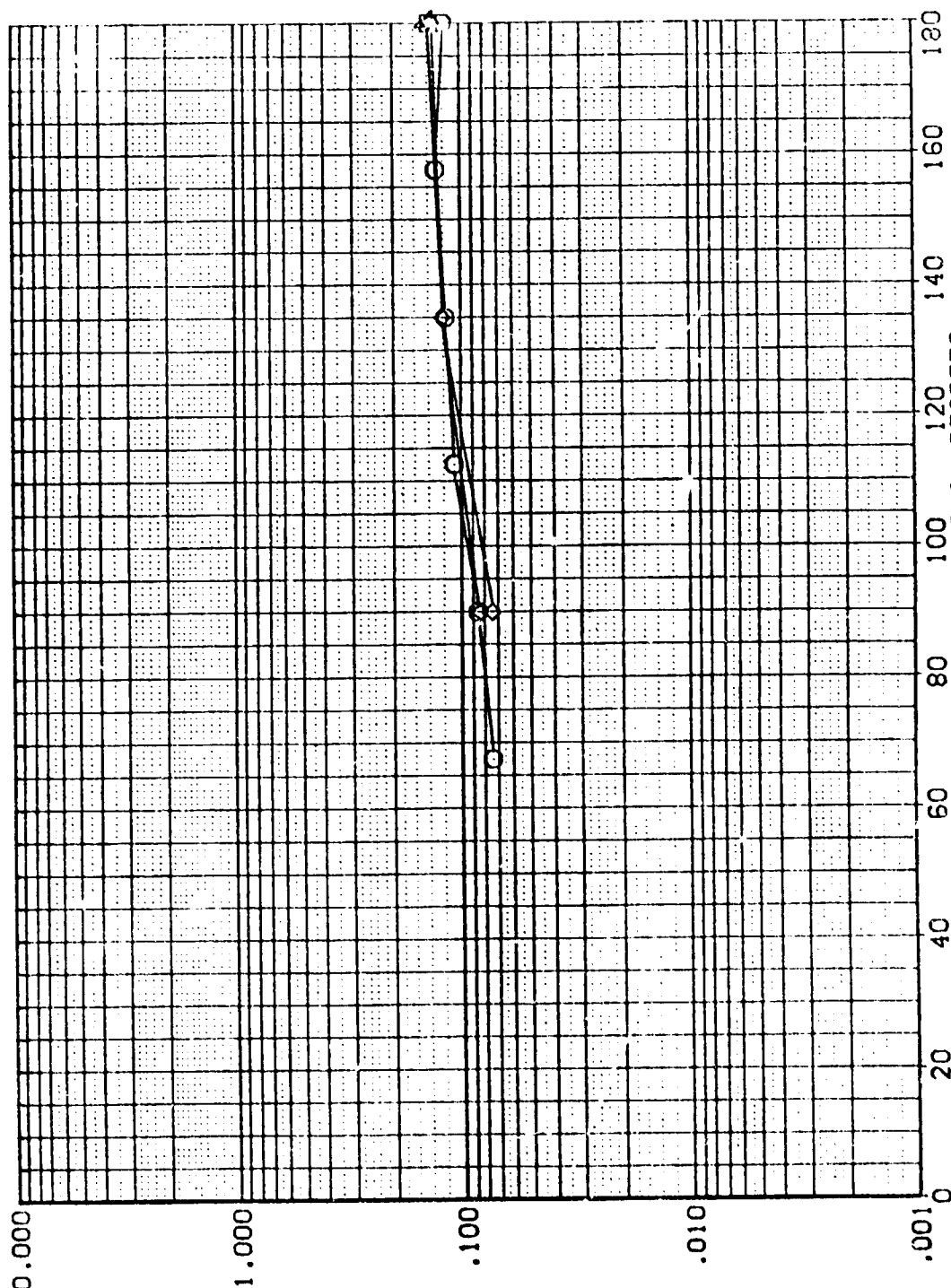


FIG 19 ET ALONE HEATING RATE VARIATION WITH Φ - NO TRIPS

EXTERNAL TANK (RQMT15)

IH18 T8

PARAMETRIC VALUES
ALPHA -5.000
BETA 6.000
MACH .000

SYMBOL X/L HAW/HT RN/L
.000
.010
.020
.060
.100

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

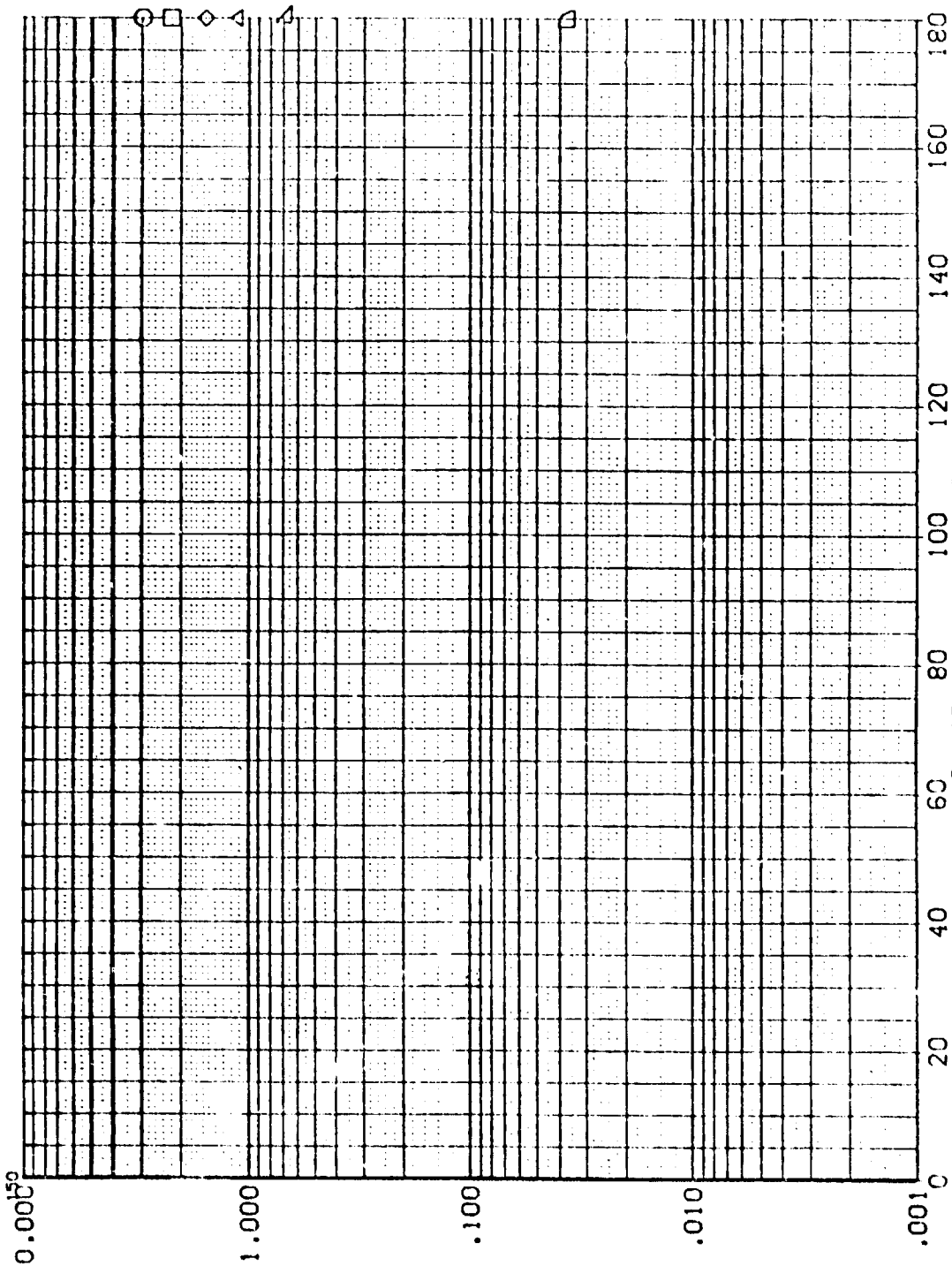


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

IH18 T8

PARAMETRIC VALUES
ALPHA
MACH
-5.000
5.000
.000

MAW/HT
.900
4.580

SYMBOL X/L
.200
.250
.300
.350
.375
10.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

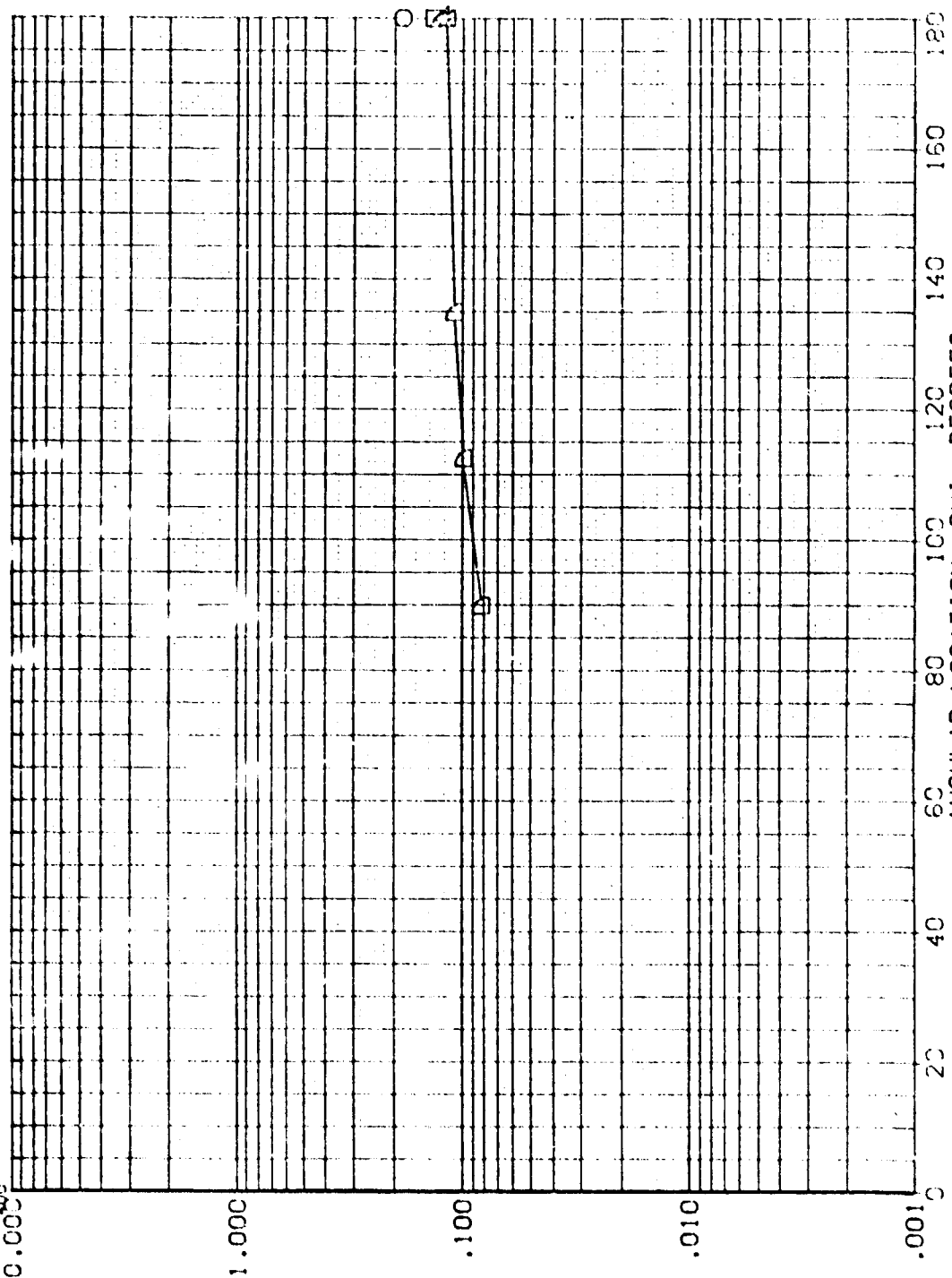


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - N3 TRIPS

EXTERNAL TANK (RQMT15)

IH18 T8

SYMBOL

X/L

HAW/HT

RN/L

.425
.450
.475
.500
.525

ALPHA
MACH

PARAMETRIC VALUES

-5.000
6.000

BETA
.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

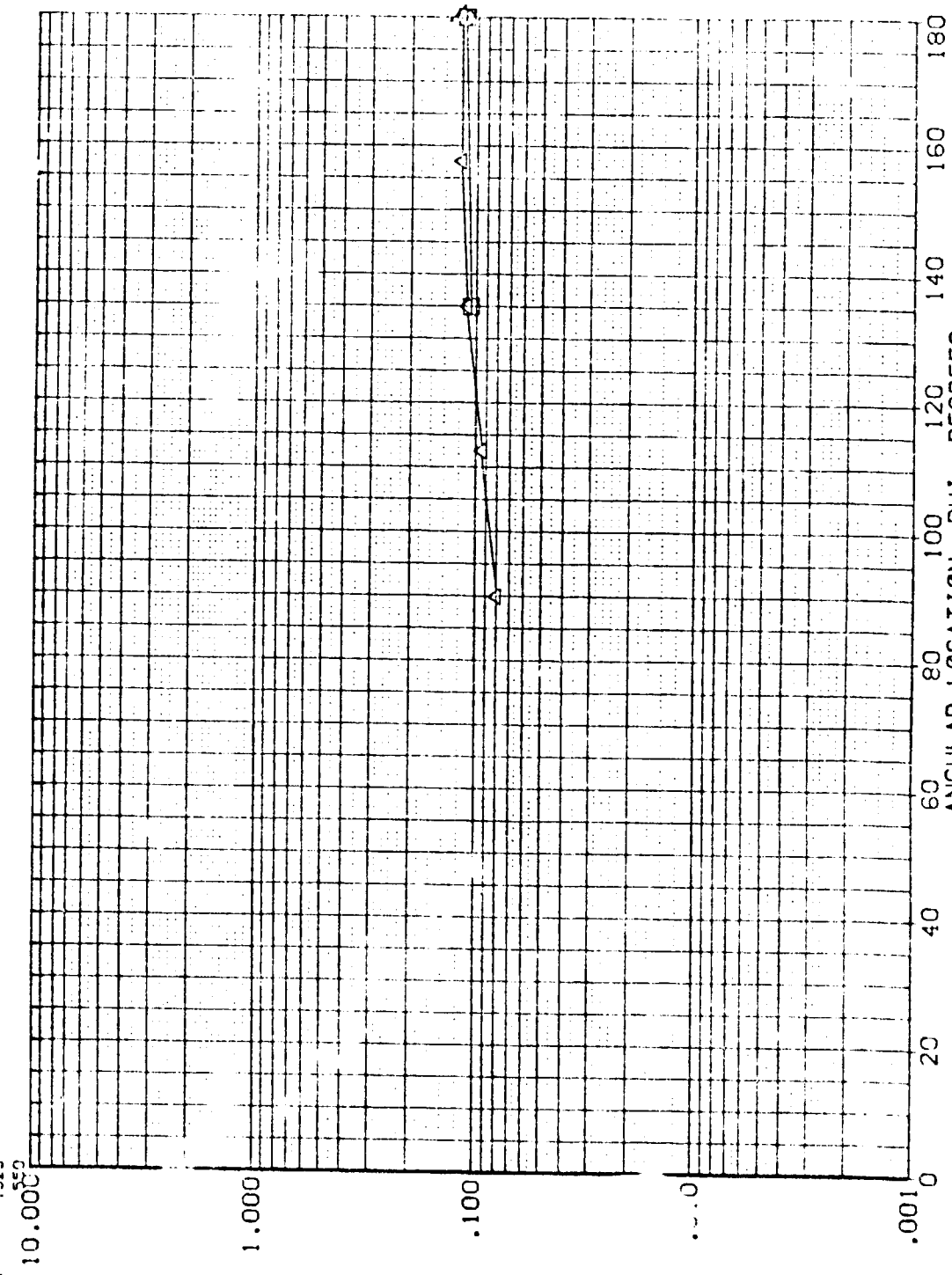


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

PARAMETRIC VALUES	ALPHA	BETA
	-5.000	6.000
	MACH	
		.000

H18 T8
 HAW/HT .900 RN/L 4.580
 X/L .600
 .650
 .700
 .800
 .900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

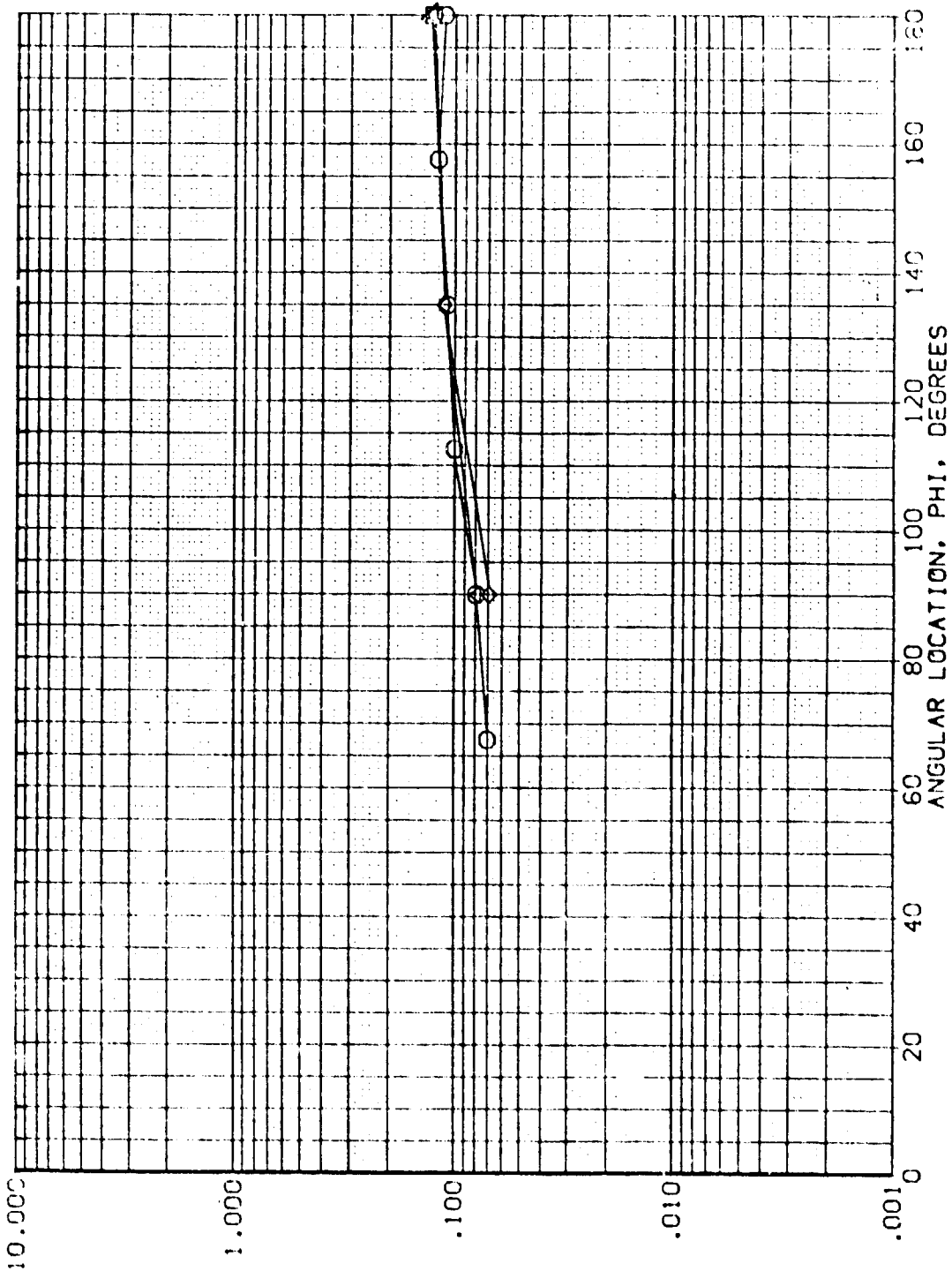


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

IH18 18

PARAMETRIC VALUES
 ALPHA -5.000
 BETA 6.000
 HACH .000

SYMBOL X/L HAW/HT RN/L
 .000
 .010
 .020
 .050
 .100
 .150

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

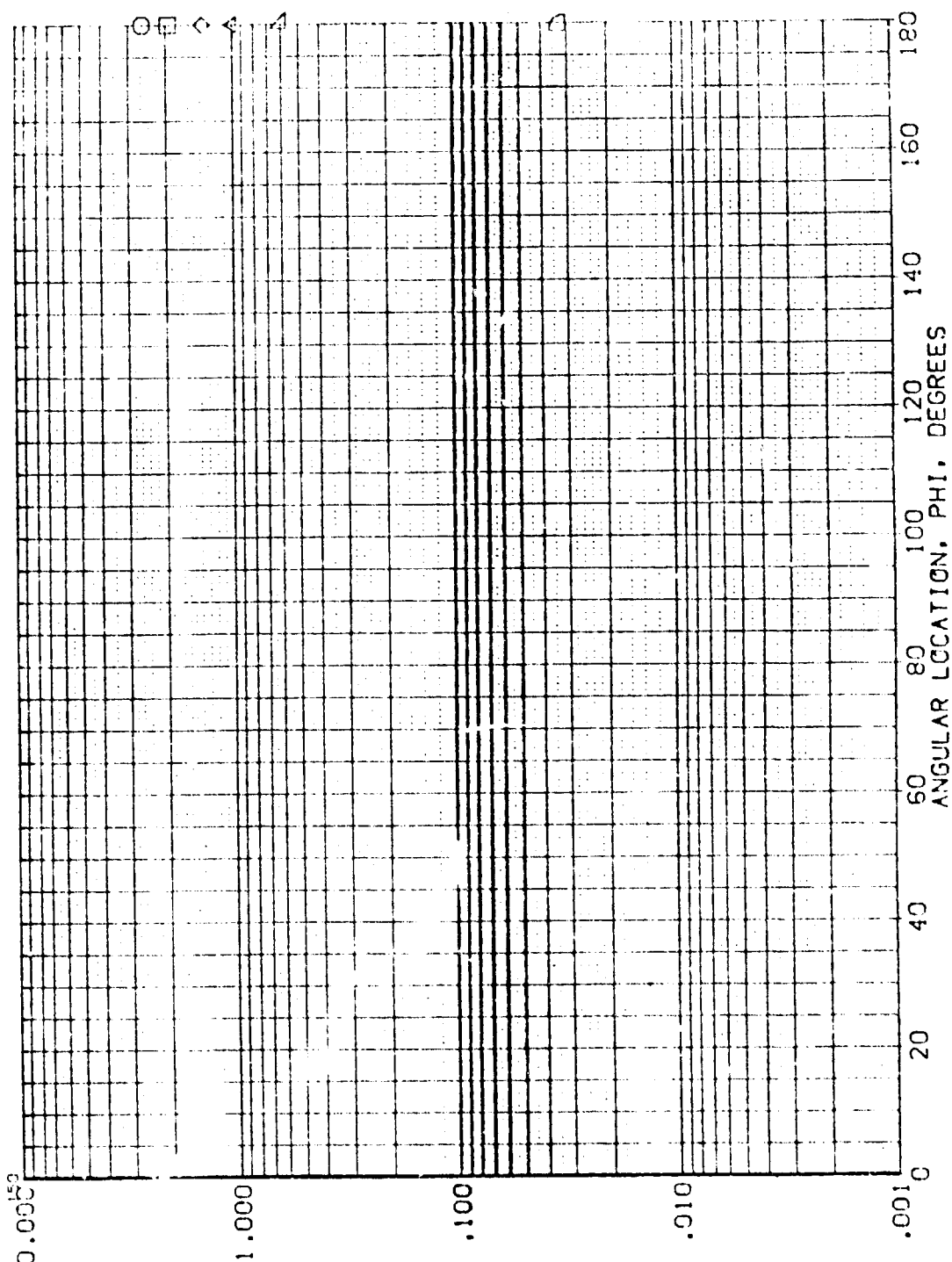


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

8118 81

PARAMETRIC VALUES	
ALPHA	-5.000
BETA	6.000
MACH	.000

SYMBOL	IN/L	HAZ/WT	RN/L
Q	.200	1.000	4.580

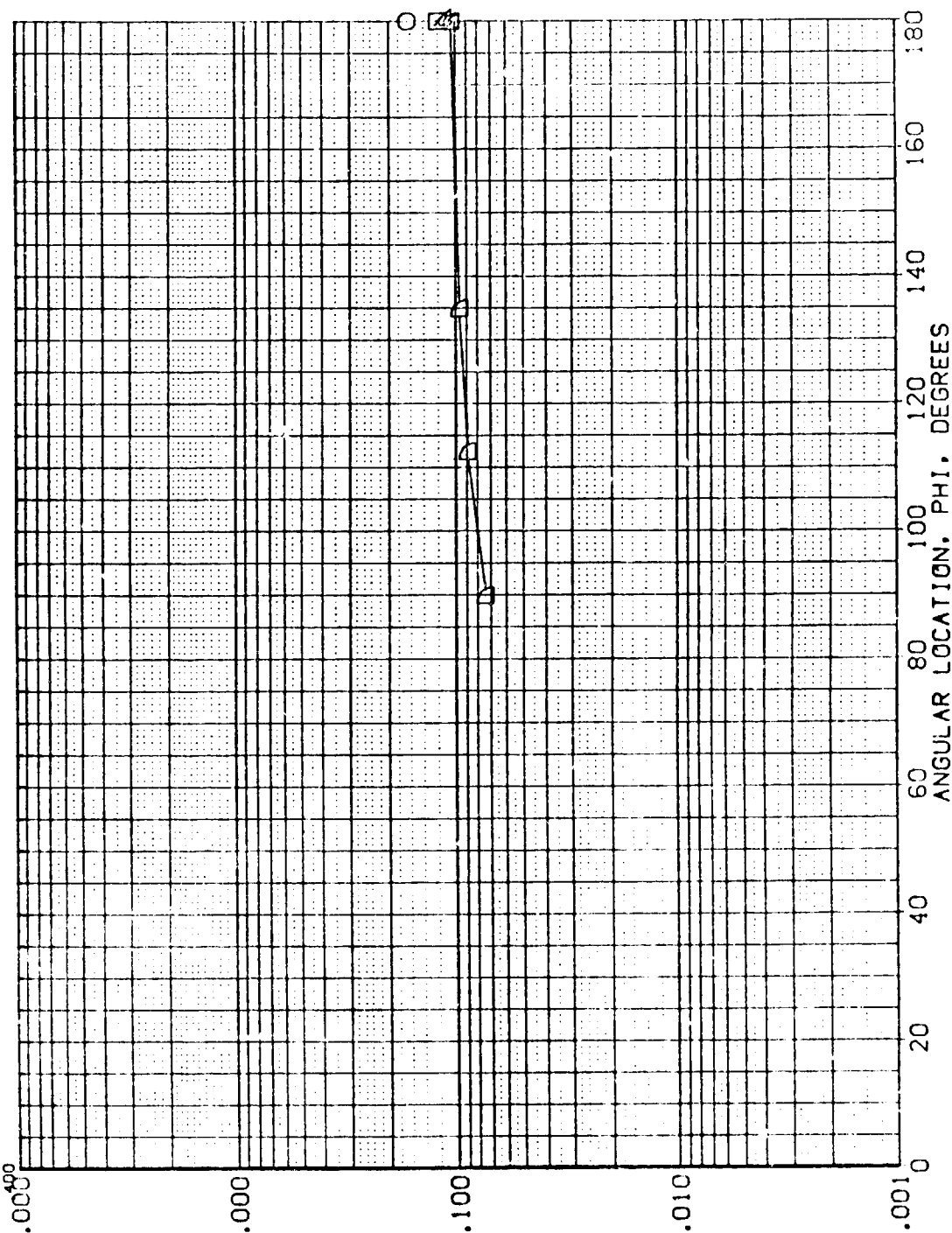
RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF} 

FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

EXTERNAL TANK (RQMT15)

1418 18

PARAMETRIC VALUES
ALPHA -5.000 BETA .000
MACH 6.000

SYMBOL X/L HAW/RT RN/L
□ .425
◇ .450
◇ .475
◇ .500
◇ .525

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

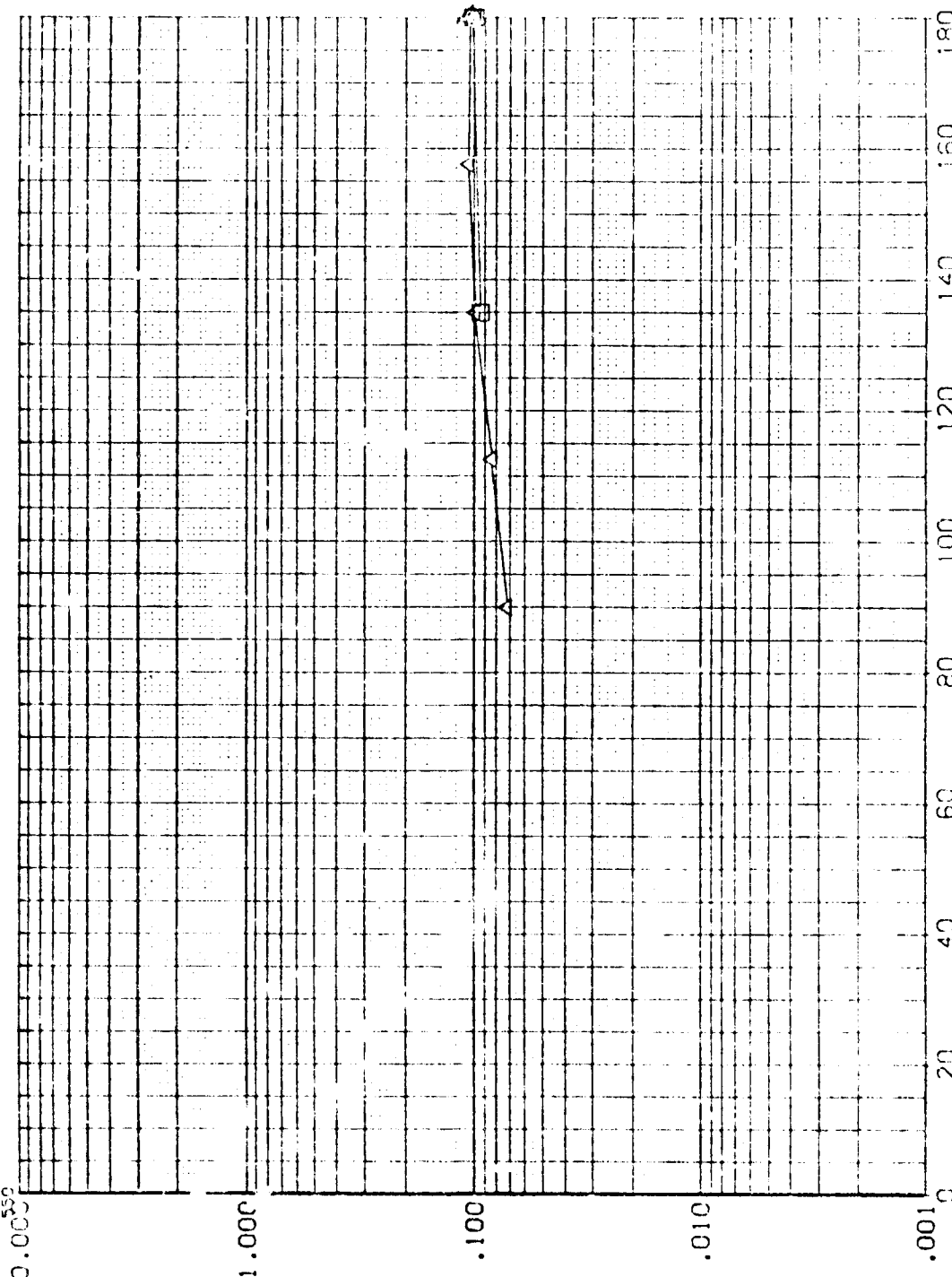


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

IH18 T8

EXTERNAL TANK (RQMT15)

SYMBOL

X/L

HAW/HT

RN/L

4.580

0.600

0.650

0.700

0.800

0.900

PARAMETRIC VALUES

-5.000

BETA

6.000

ALPHA

MACH

.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

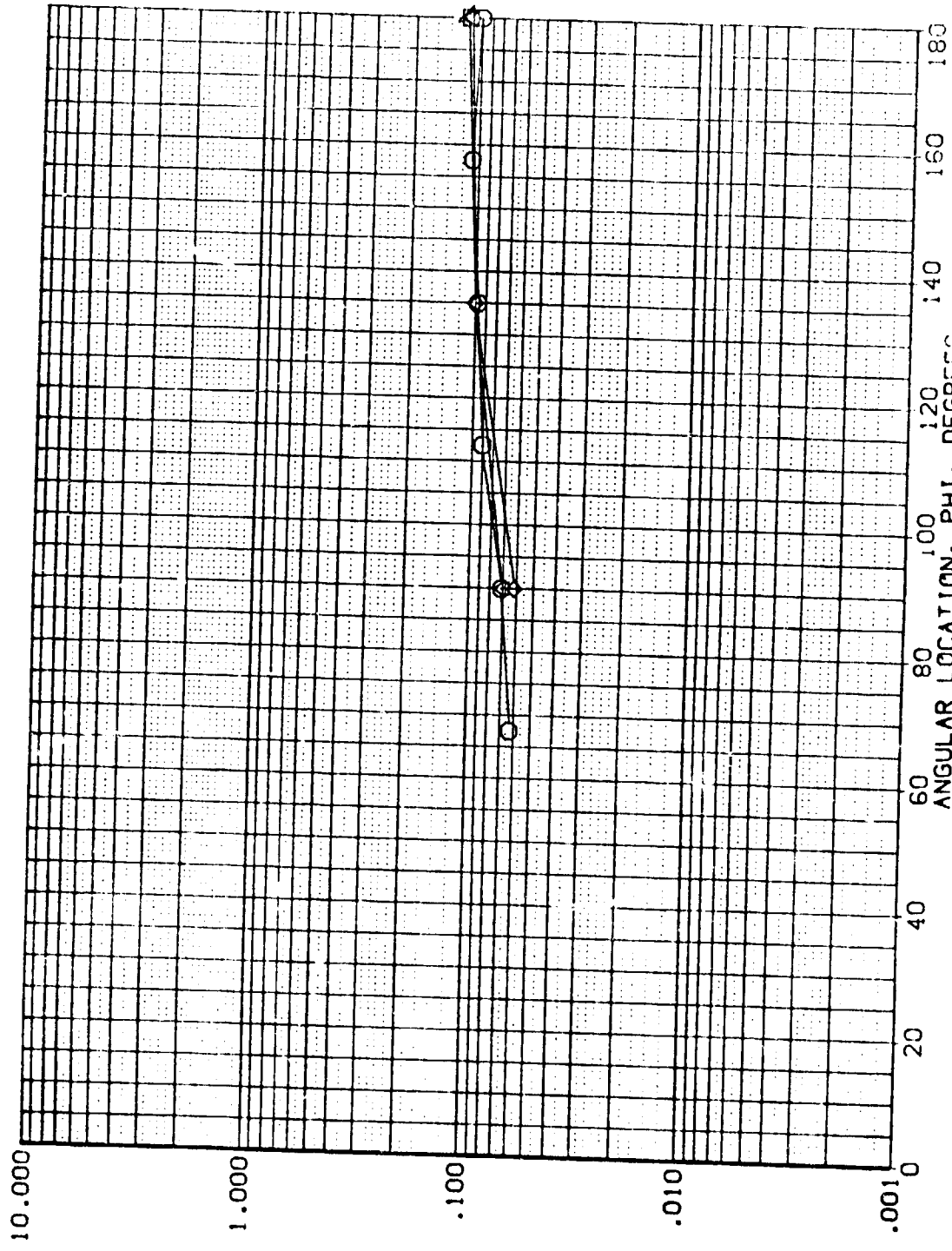


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R0HT16) IM18 T8
(R0HT15) IM18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

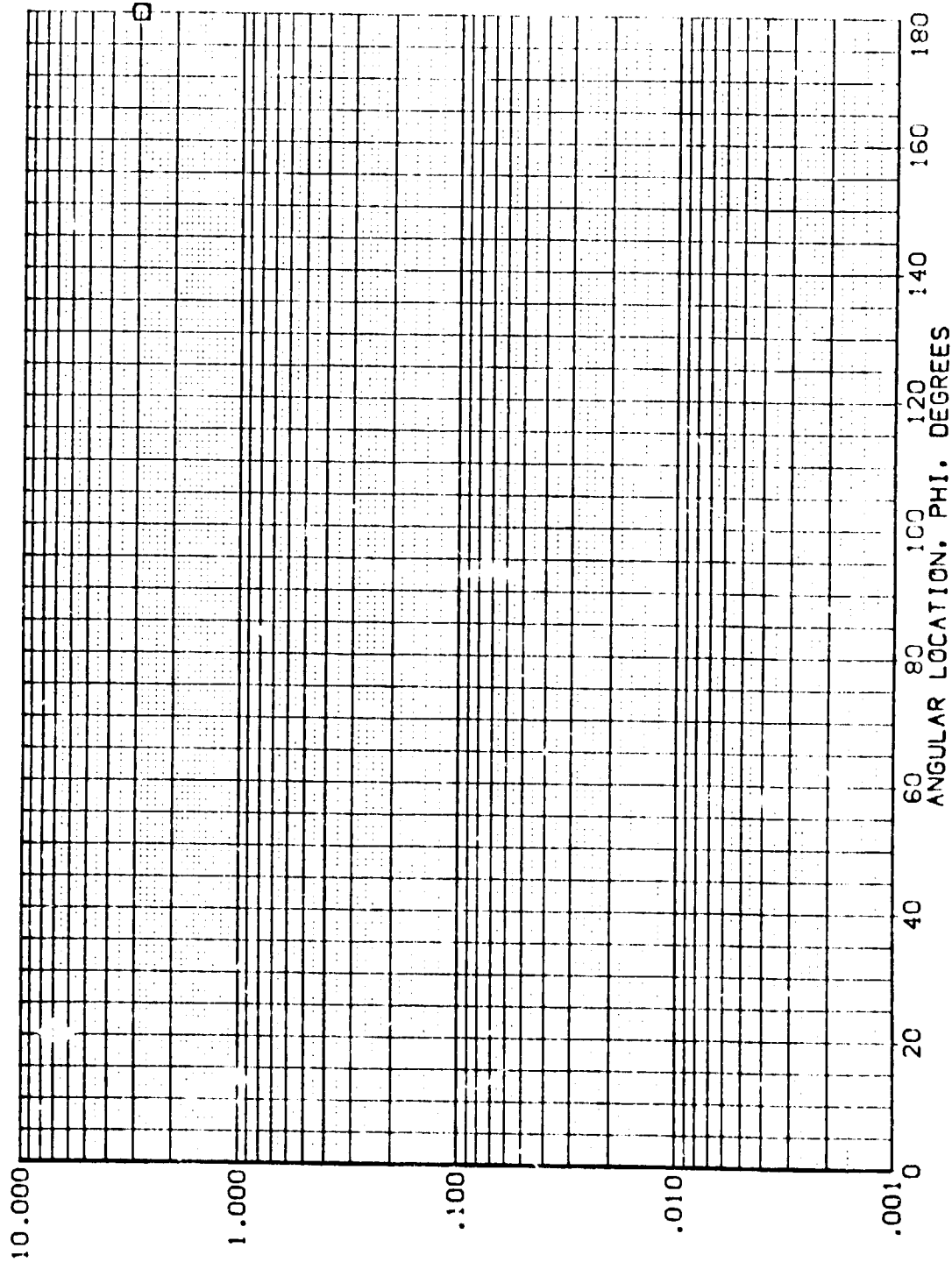


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .000

DATA SET SYMBOL (ROMT16)
(ROMT15)

IM18 T8
IM18 T8

CONFIGURATION DESCRIPTION

EXTERNAL TANK
EXTERNAL TANK

BETA .000
.000

ALPHA .000
-5.000

MACH 6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

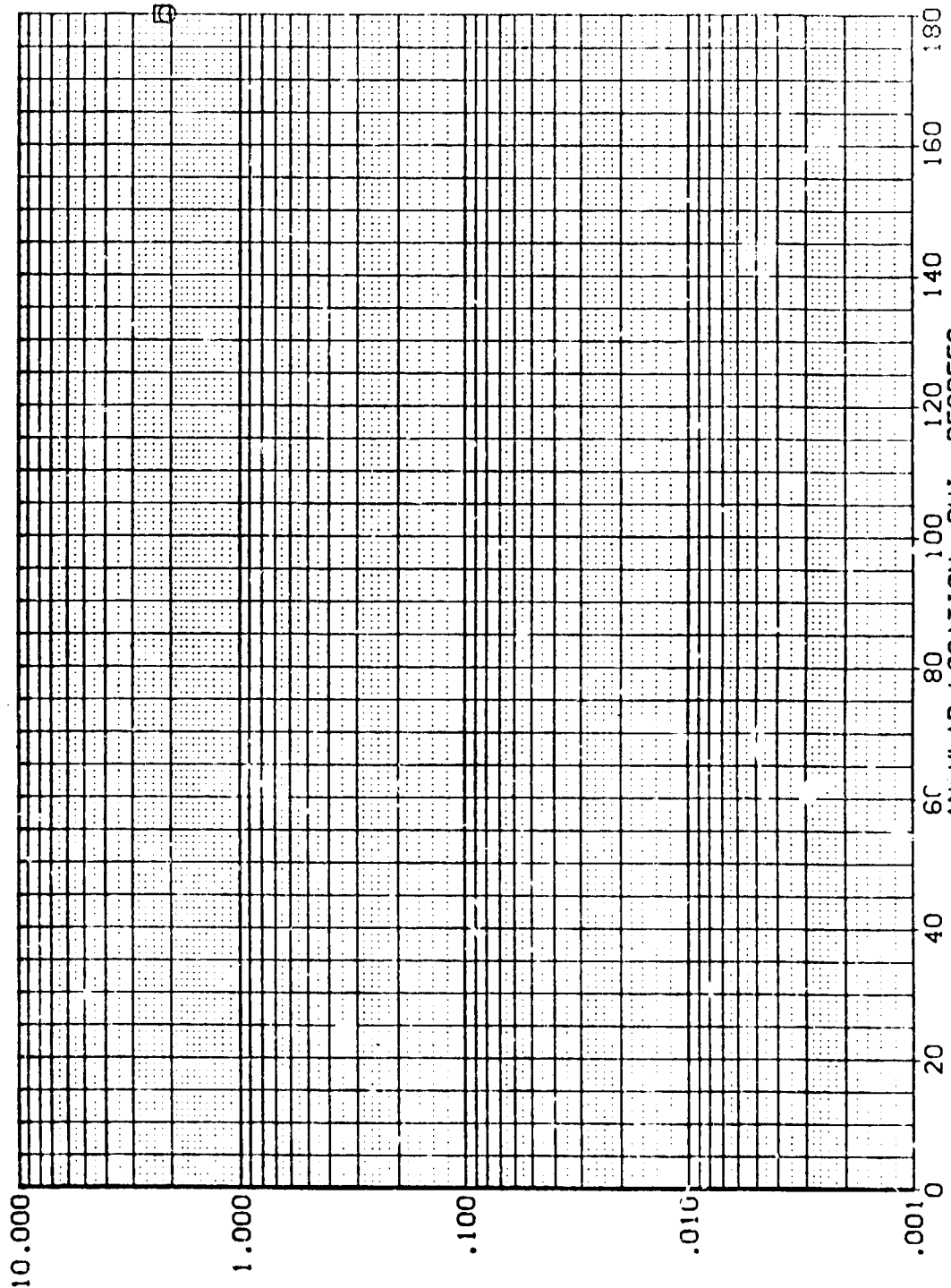


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RM = 4.569 HAW/HT = .850 X/L = .010

DATA SET SYMBOL
(RMT15)
(RMT15)

IM18 T8
IM18 T8

CONFIGURATION DESCRIPTION

EXTERNAL TANK
EXTERNAL TANK

BETA

ALPHA

MACH

.000
-5.000
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

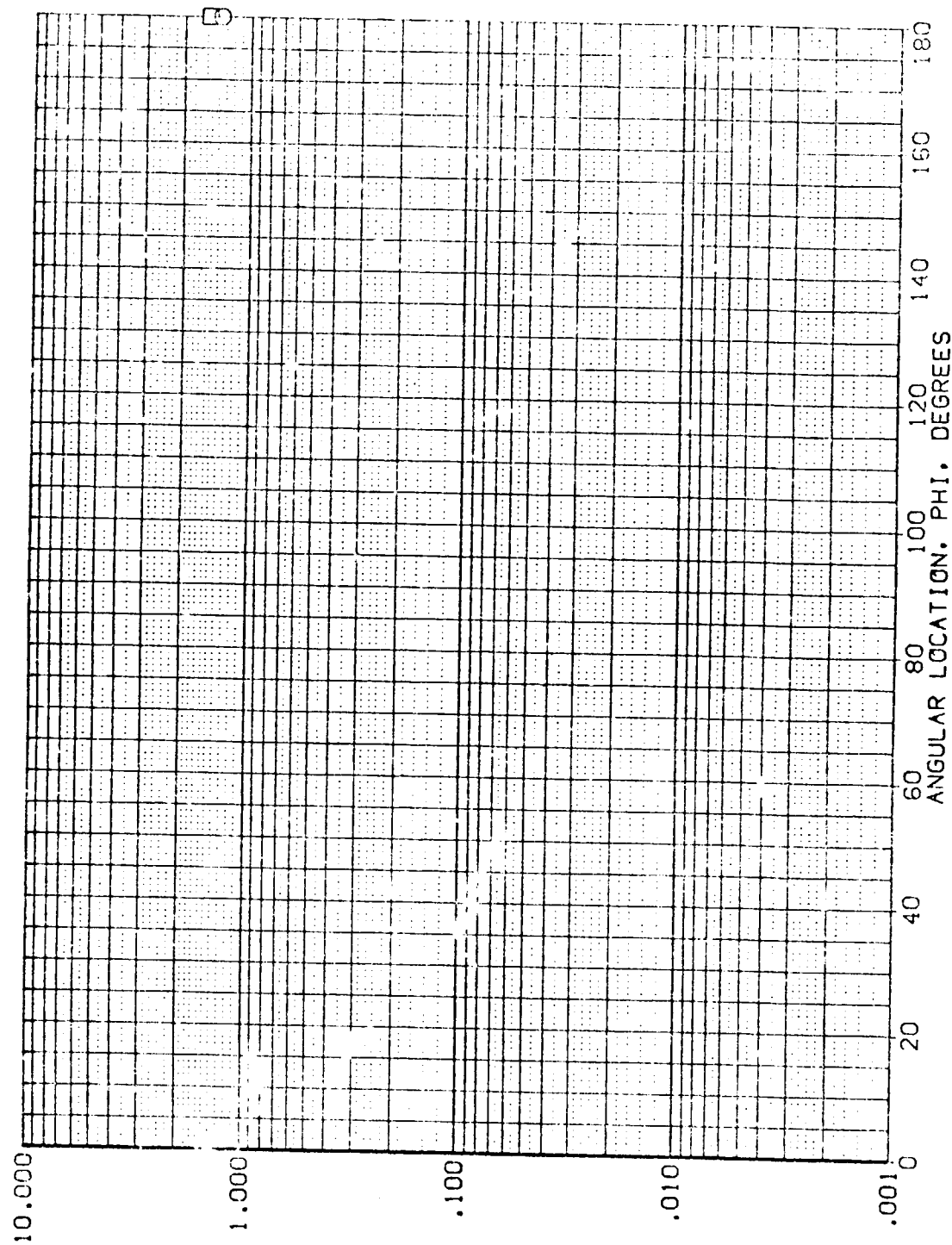


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.563 HAW/HT = .850 X/L = .020

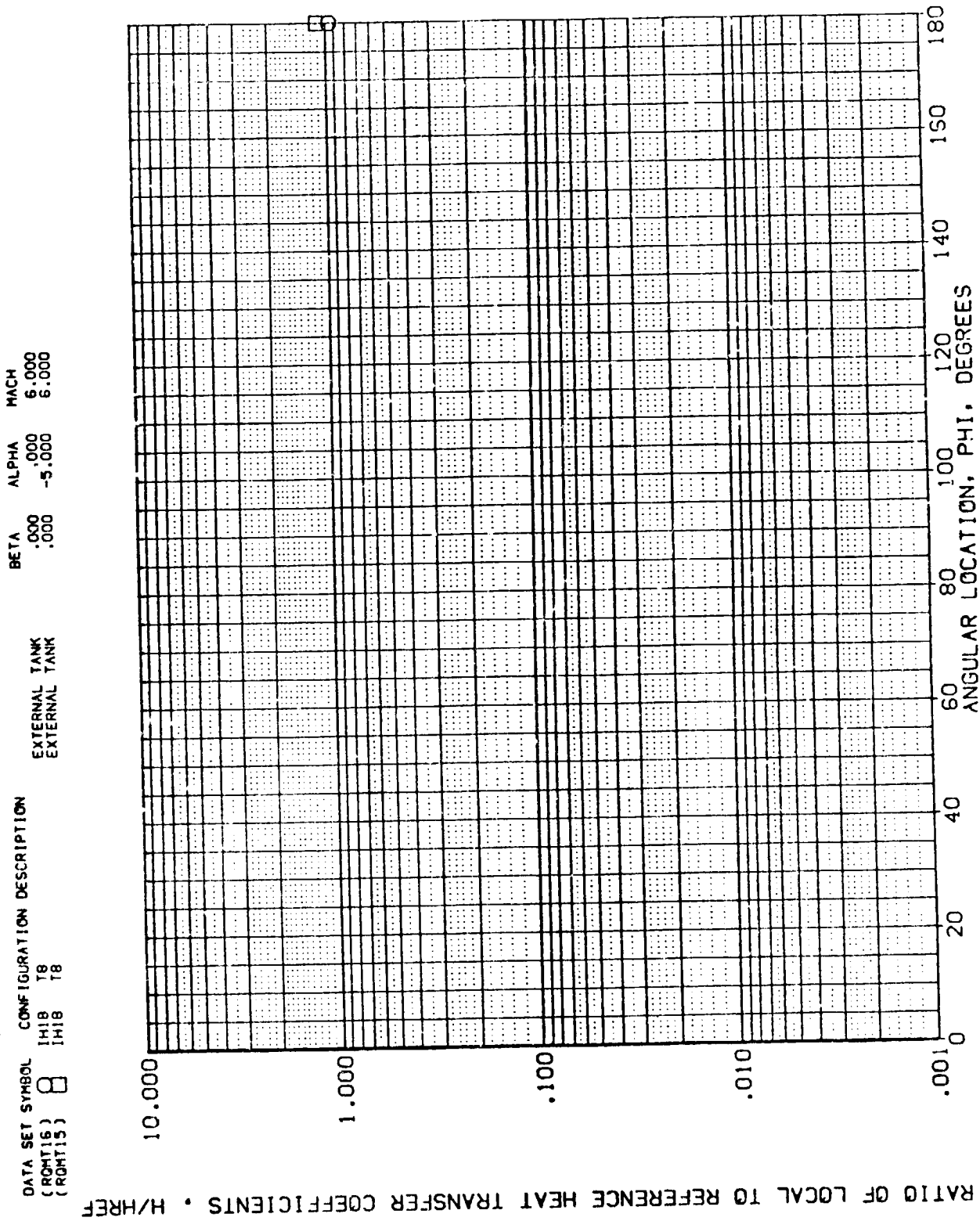


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HA/HT = .850 X/L = .060

DATA SET SYMBOL (PGMT15) **B** CONFIGURATION DESCRIPTION (H18 T8) (H18 T8)

BETA .000 .000 ALPHA .000 -5.000 MACH 5.000 6.000

EXTERNAL TANK
EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

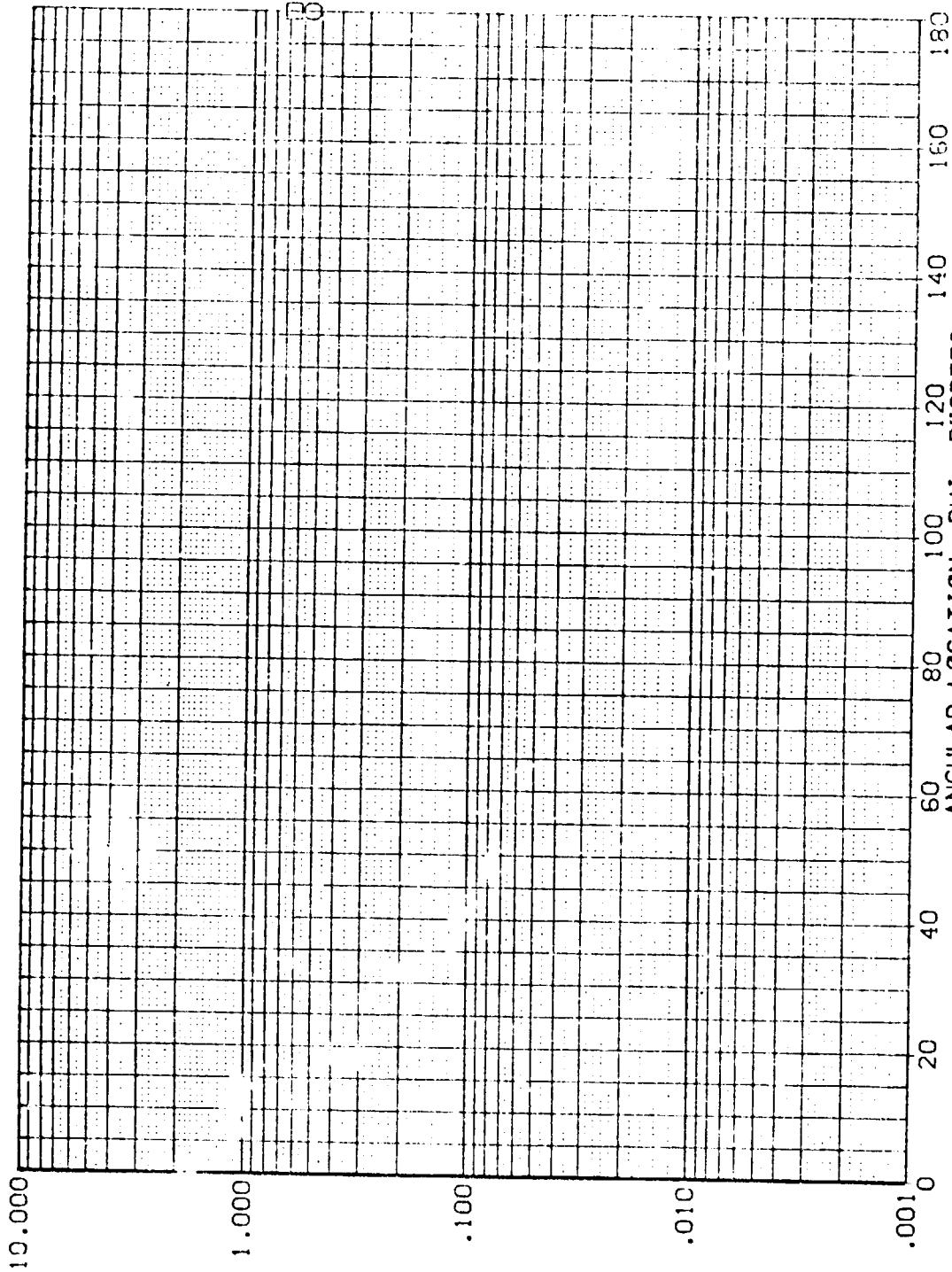


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .100

DATA SET SYMBOL
(PCMT15) 8
(PCMT15) 8

CONFIGURATION DESCRIPTION
H18 T8
H18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

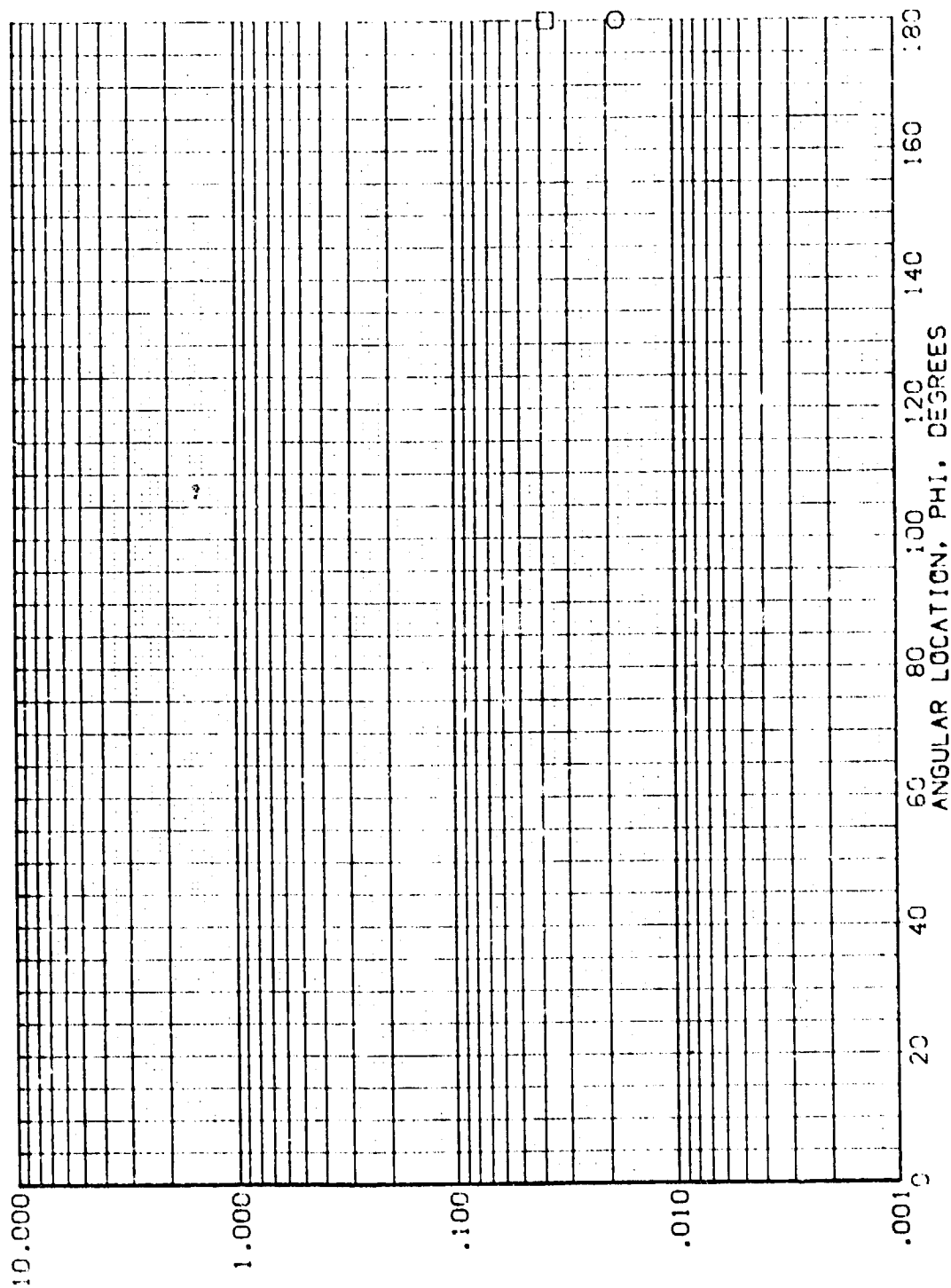


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $h_{AW}/h_T = .850$ $X/L = .150$

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(R0MT15)
(R0MT13)

CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

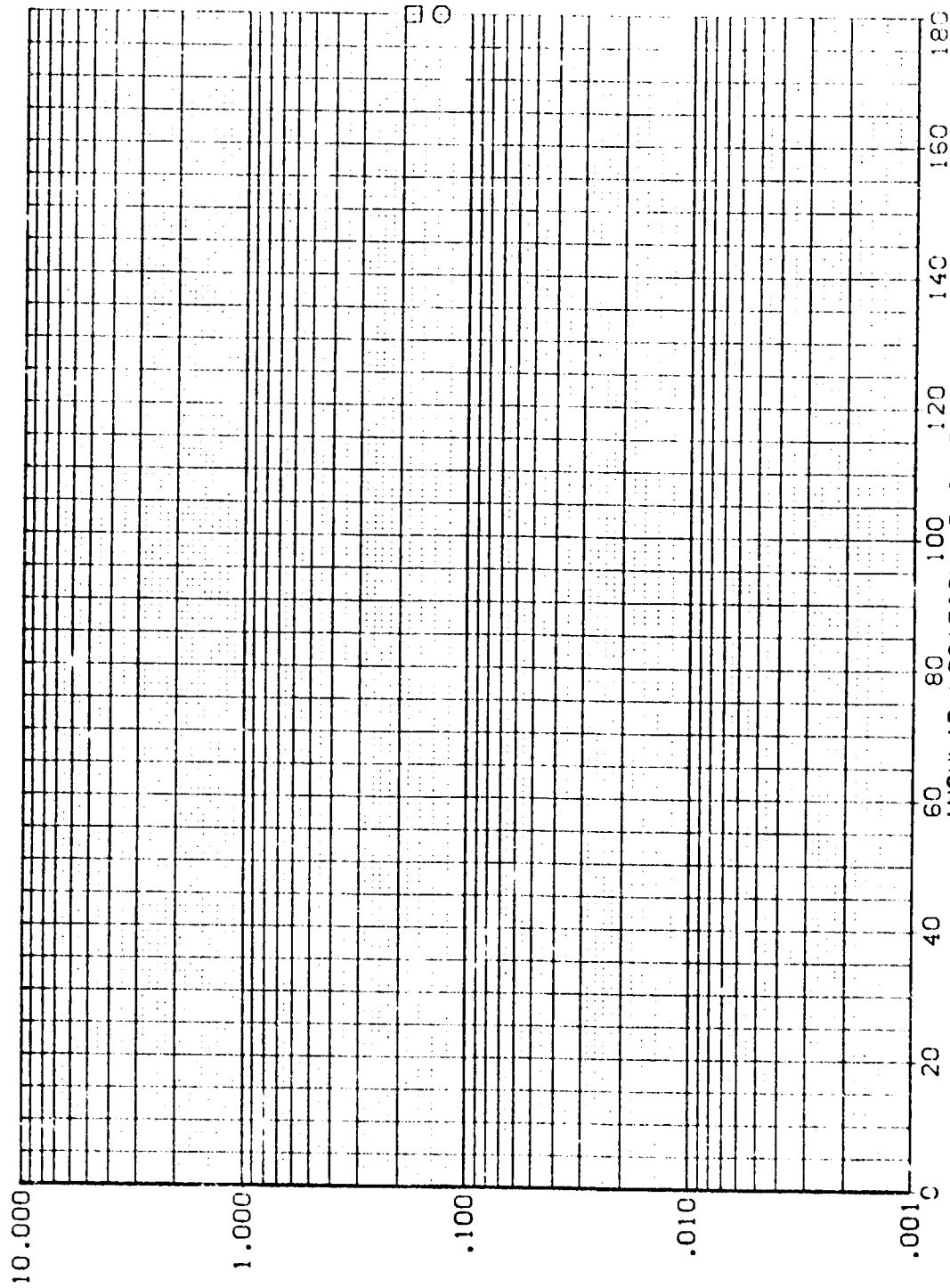


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R00116) [H18 T8]
 (R00115) [H19 T8]

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

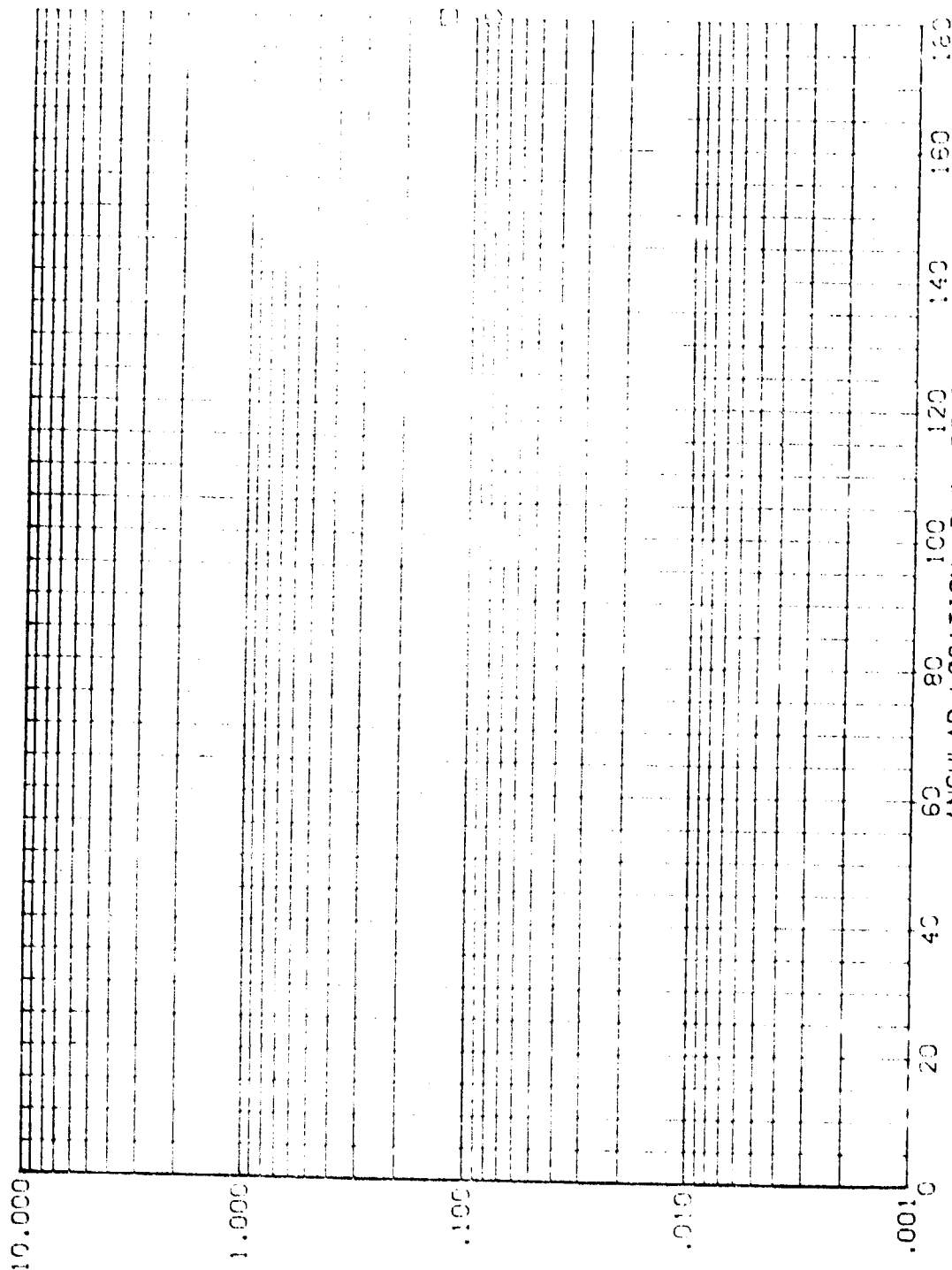


FIG 19 ET ALONG HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $-A_w/H^2 = .850$ $X/L = .250$

DATA SET SYMBOL ☐ CONFIGURATION DESCRIPTION
 (PMT:6) H18 T8
 (PMT:5) H18 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

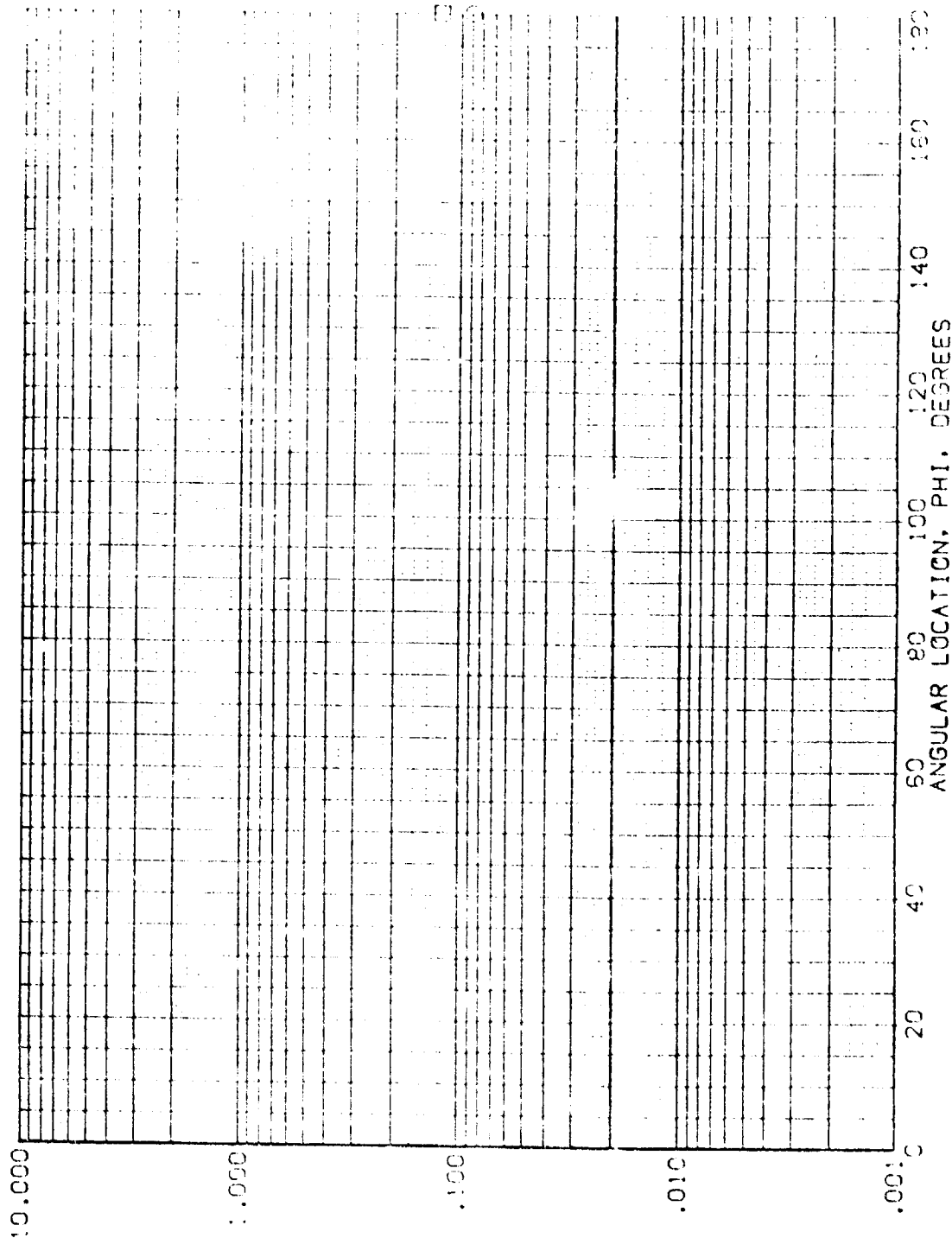



FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $-AW/HI = .850$ $X/L = .300$

DATA SET SYMBOL (RMT:5)  (RMT:5)

CONFIGURATION DESCRIPTION
IM18 TB
IM18 TB

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

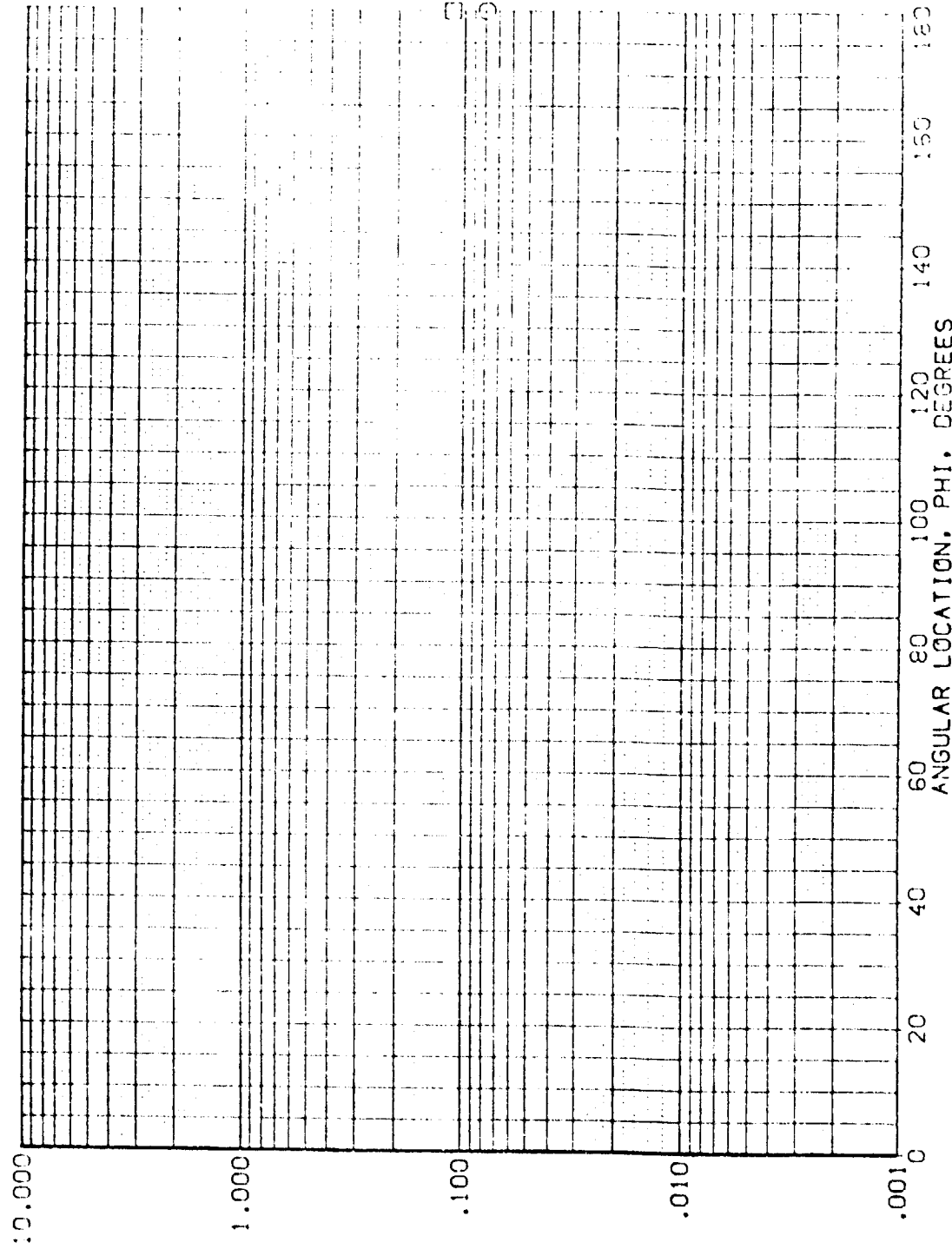


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .350

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL
(R0HT16)
(R0HT15)

CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
-5.000 6.000

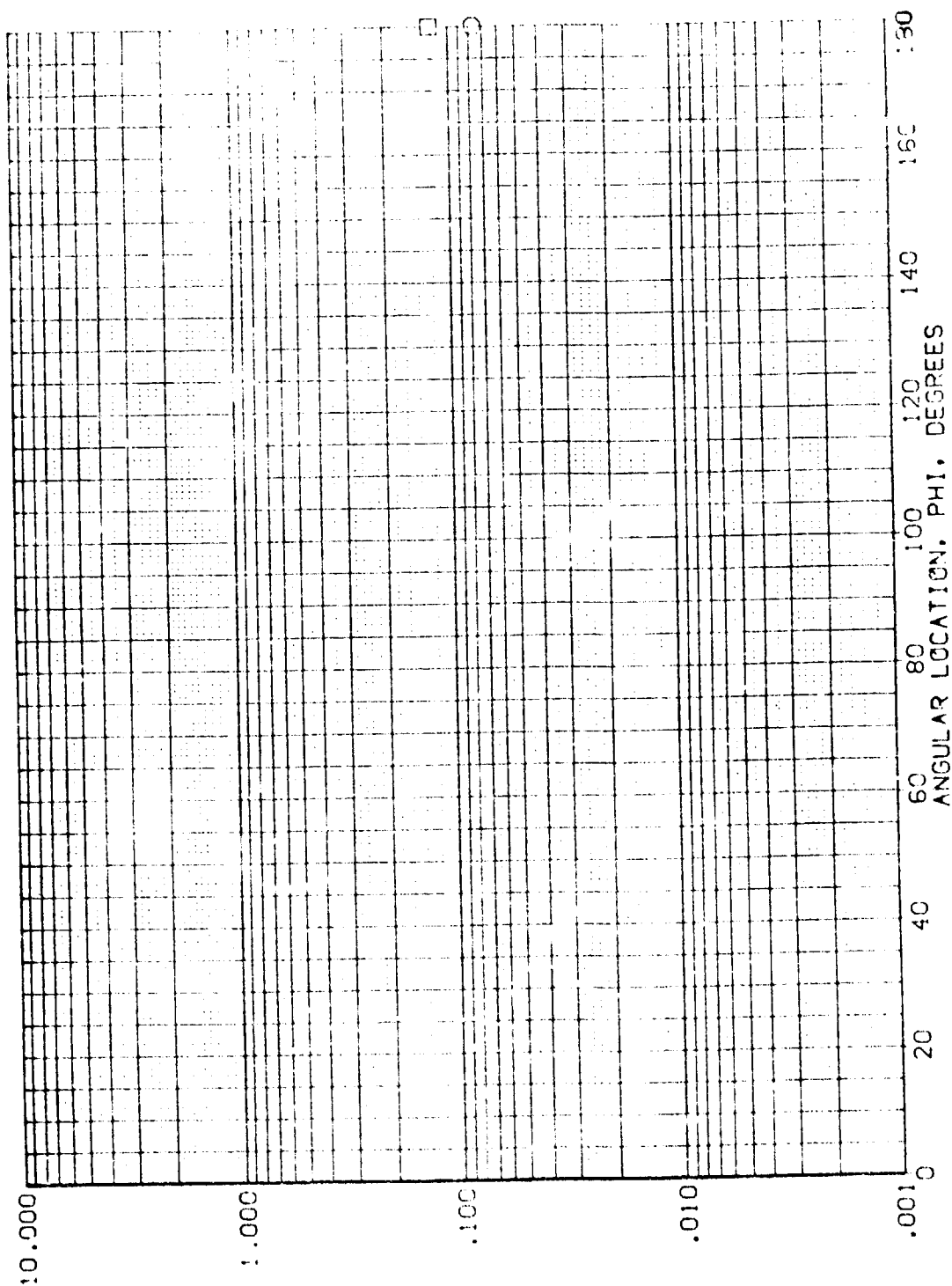


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $h_{AW}/h_T = .850$ X/L = .375

DATA SET SYMBOL
(R0MT16)
(R0MT15)

CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BE β ALPHA MACH
0.000 6.000
-5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

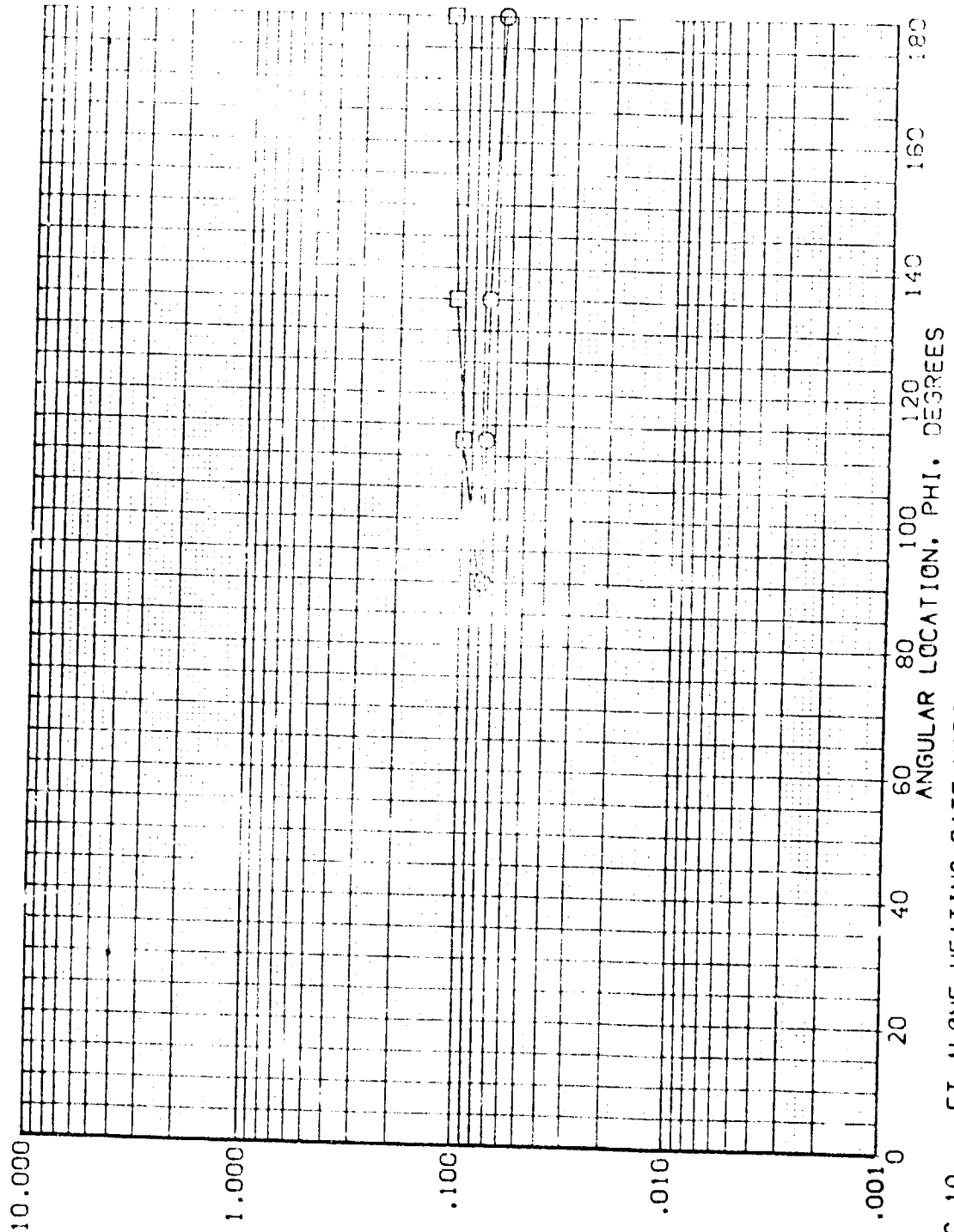


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

RN/L = 4.569 $hA_w/HT = .850$ $X/L = .400$

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL (R0MT16) 8
(R0HT15) 8

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

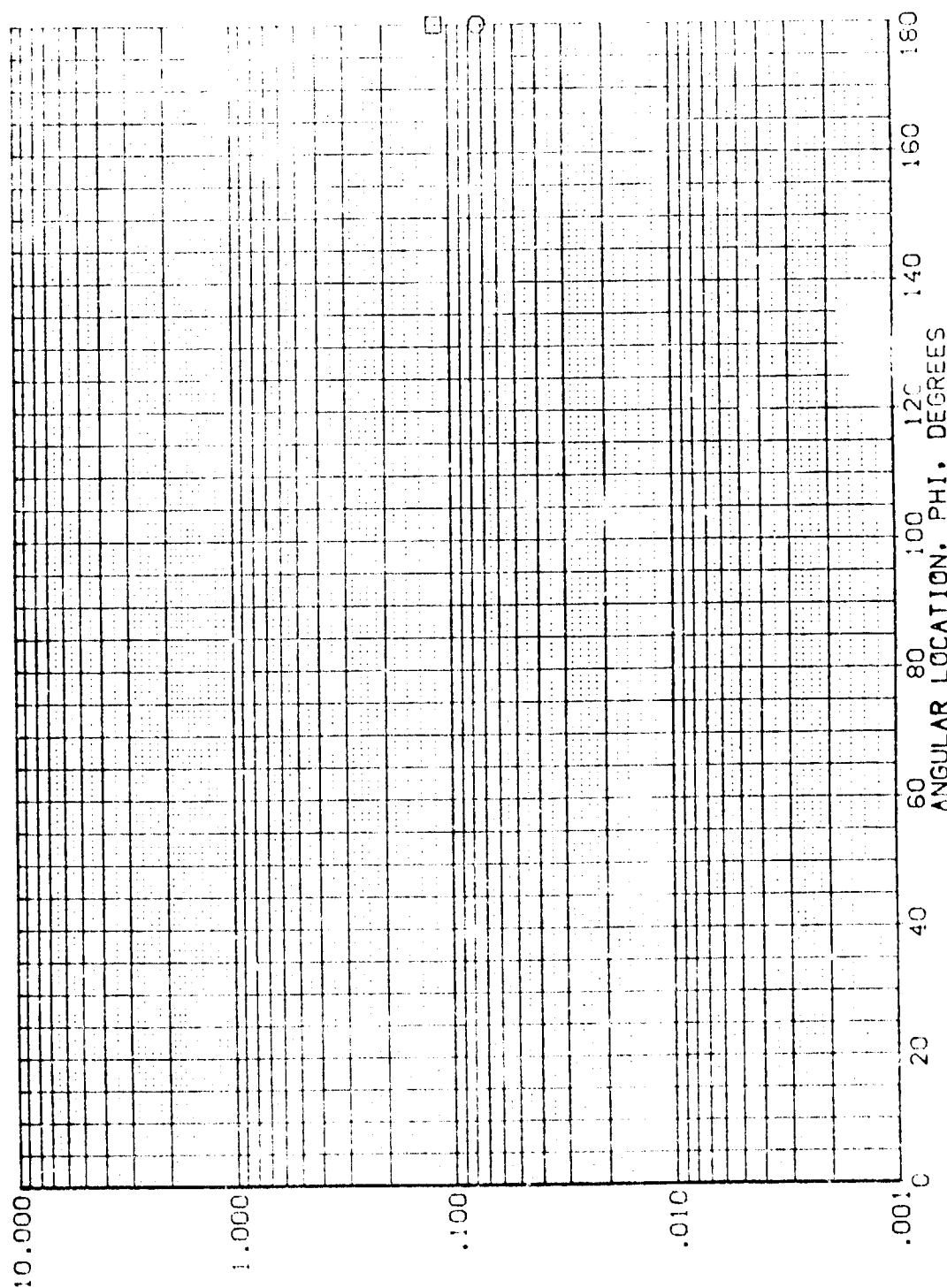


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .425

PAGE 205

DATA SET SYMBOL
(RMT16)
(RMT15)

CONFIGURATION DESCRIPTION
IM18 T8
IM18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

M CH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

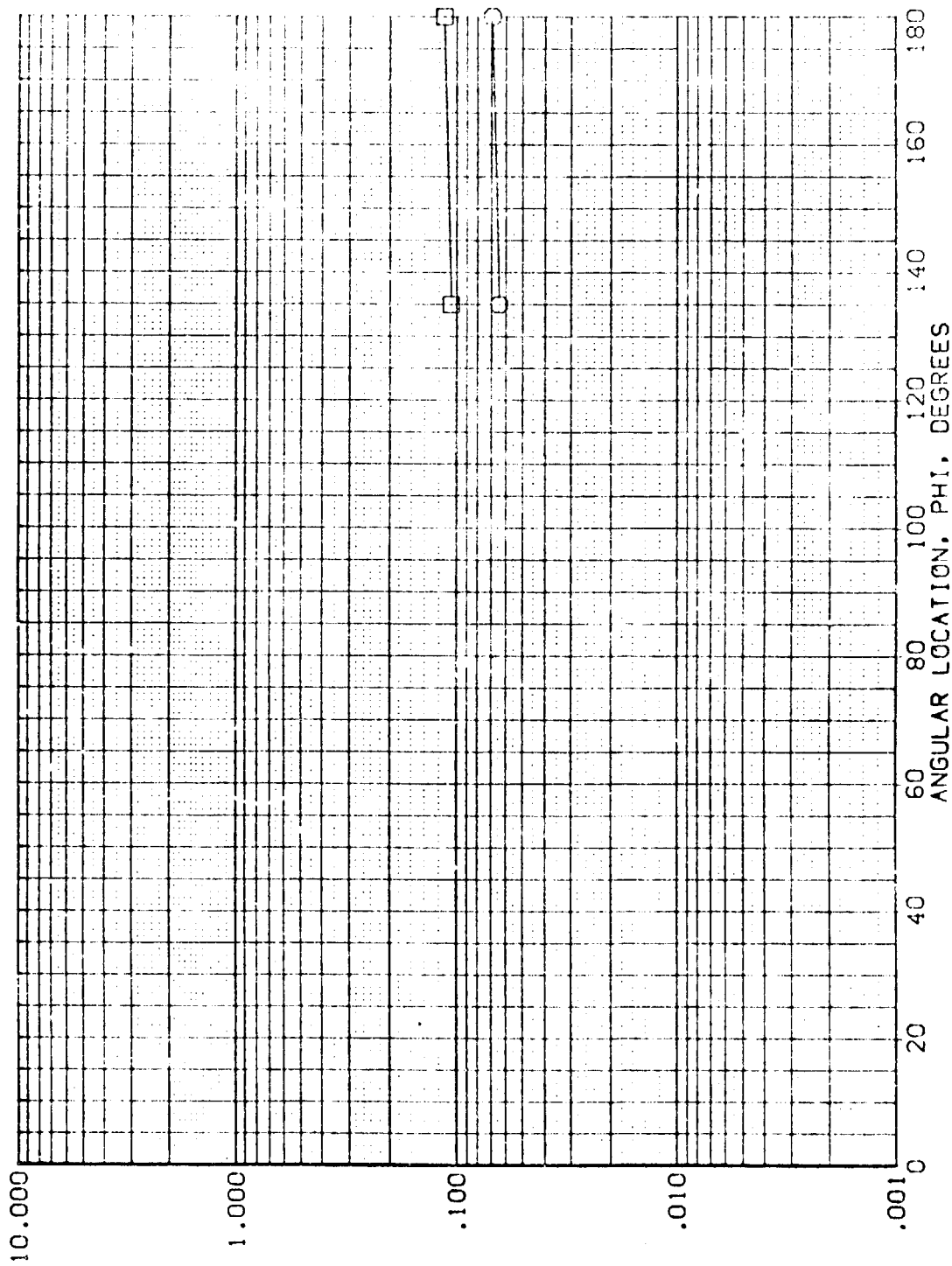


FIG 19 ET ALONE HEATING RATE VARIATION WITH Φ - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .450

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT16) (M18 T8
 (RMT15) (M18 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

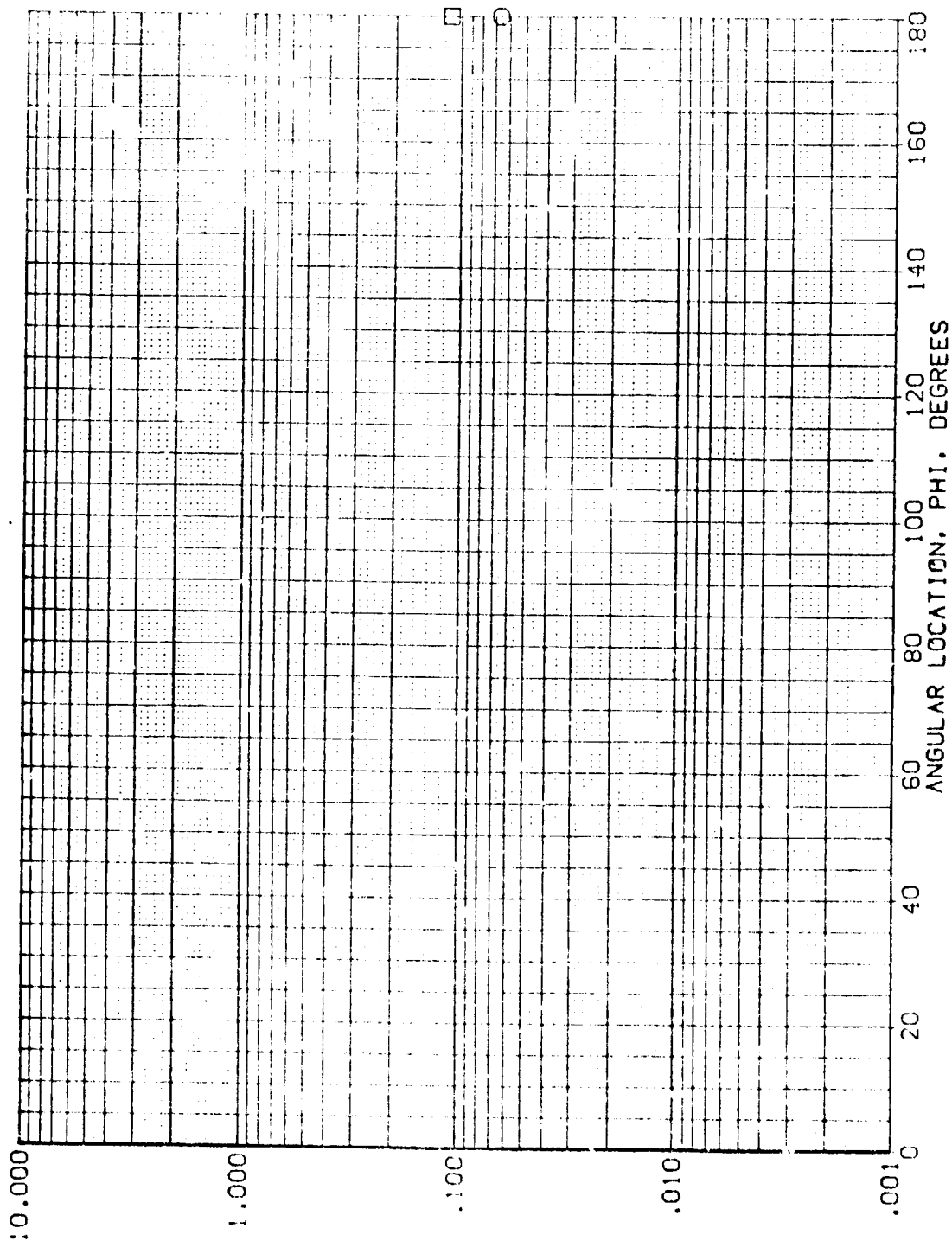


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .475

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RGMT[S]) IH18 T8
 (RGMT[S]) IH18 T8

EXTERNAL TANK BETA ALPHA MACH
 EXTERNAL TANK .000 .000 6.000
 .000 -5.000 6.000

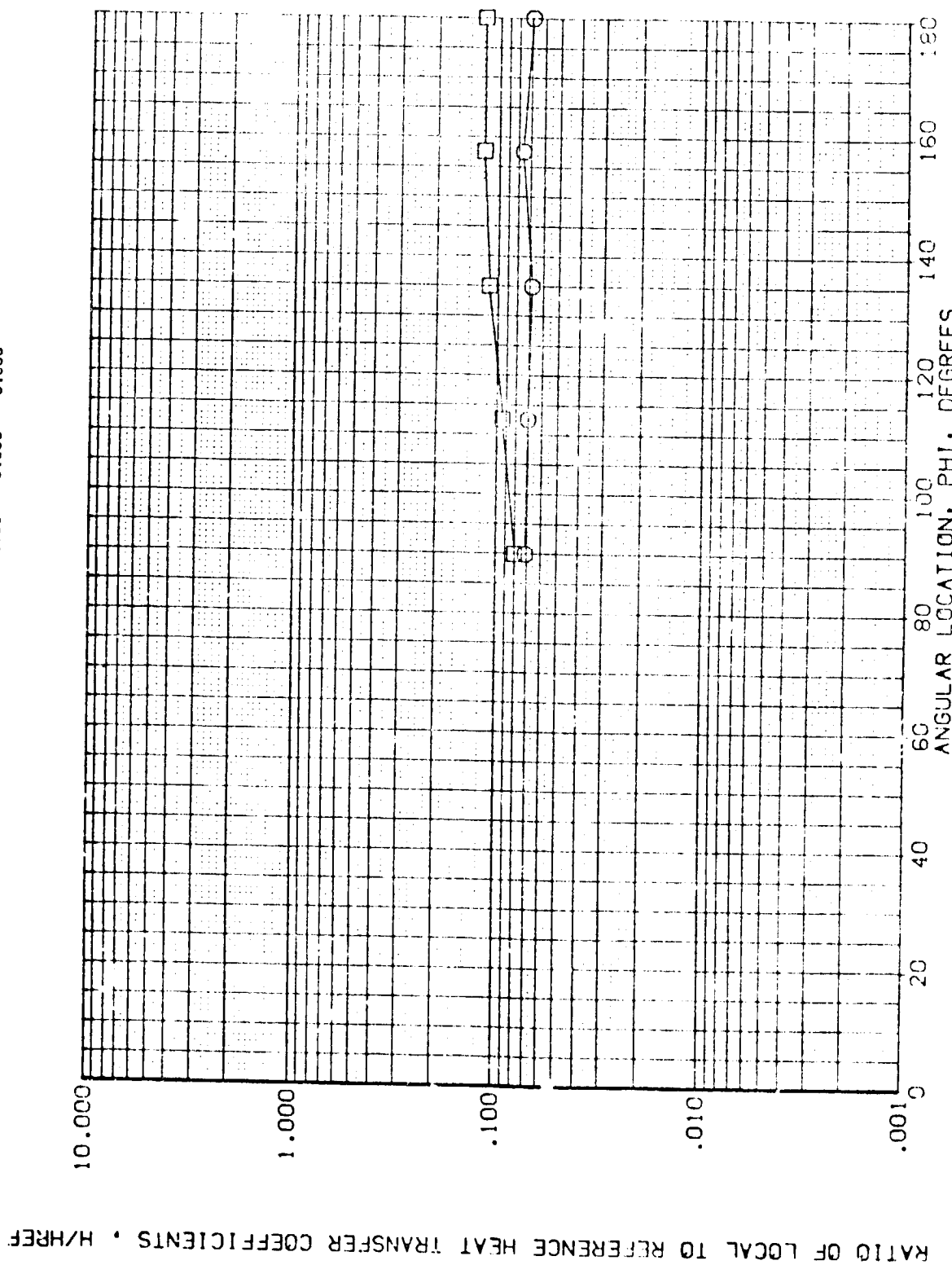


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HIT = .850 X/L = .500

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RQMT16) IM18 T8
(RQMT15) IM18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

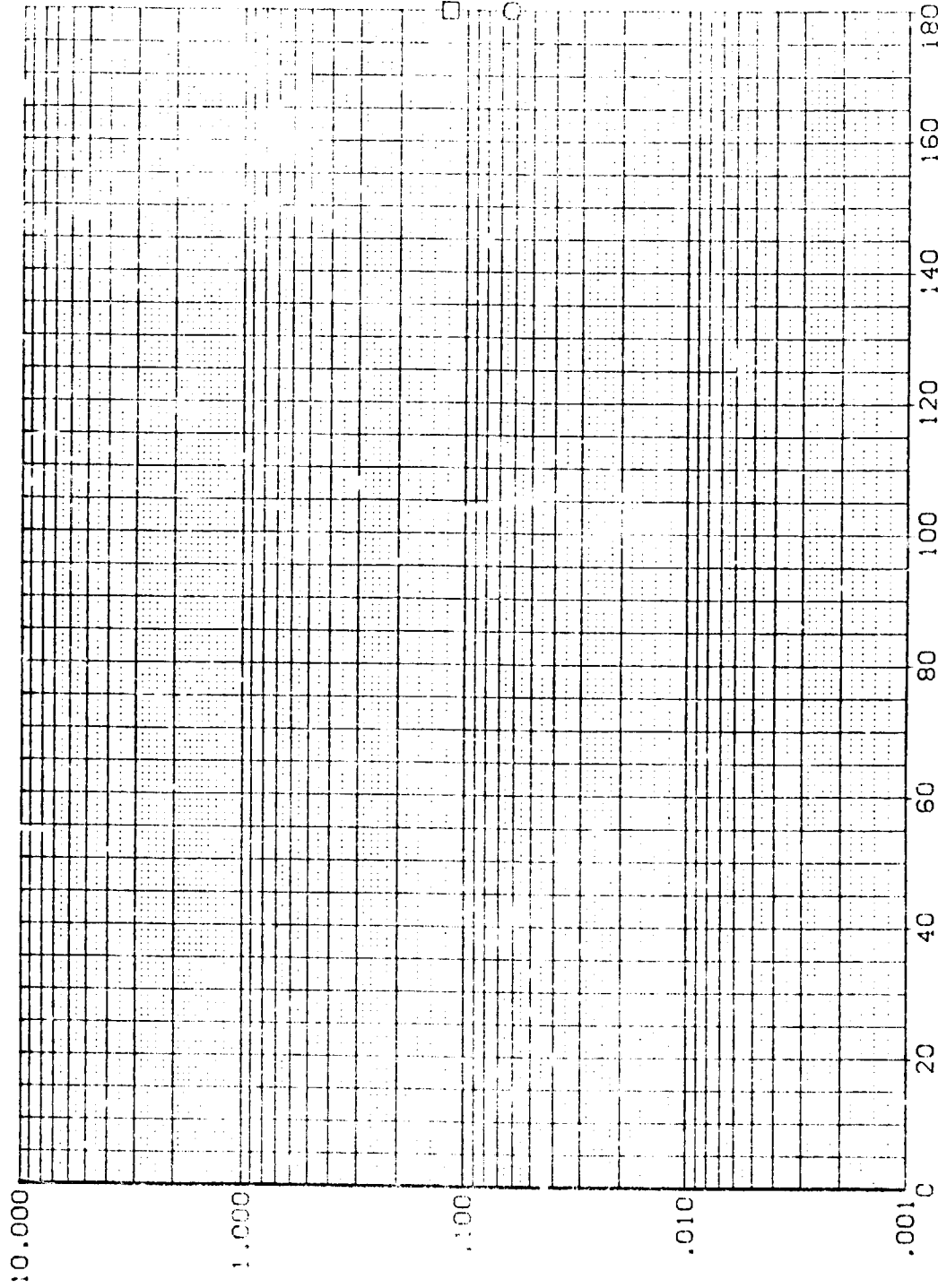


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .525

DATA SET SYMBOL
(RMT16)
(RMT15)



CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

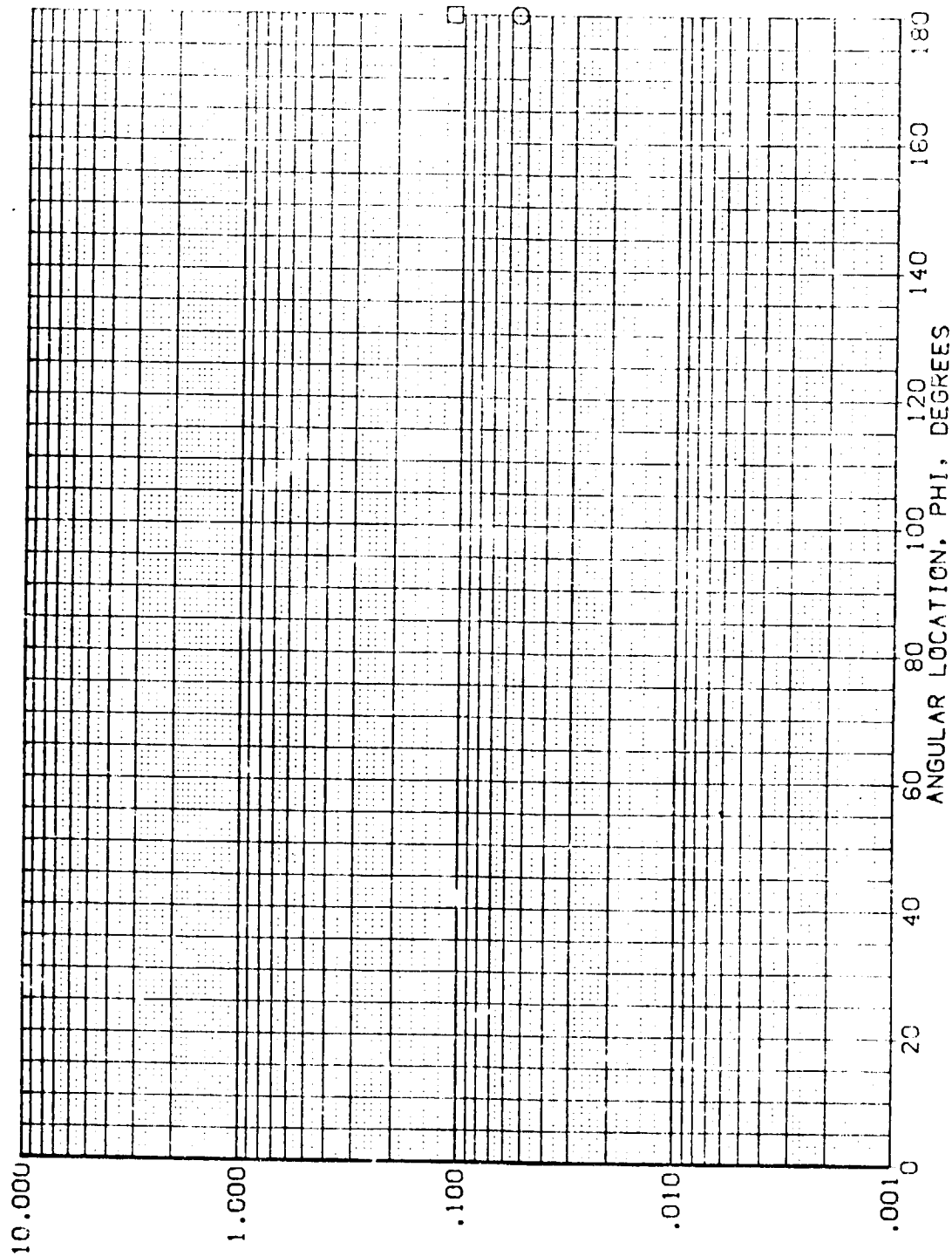


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $h_{AW}/h_T = .850$ X/L = .550

DATA SET SYMBOL (RQMT15) B
 CONFIGURATION DESCRIPTION (RQMT15) T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

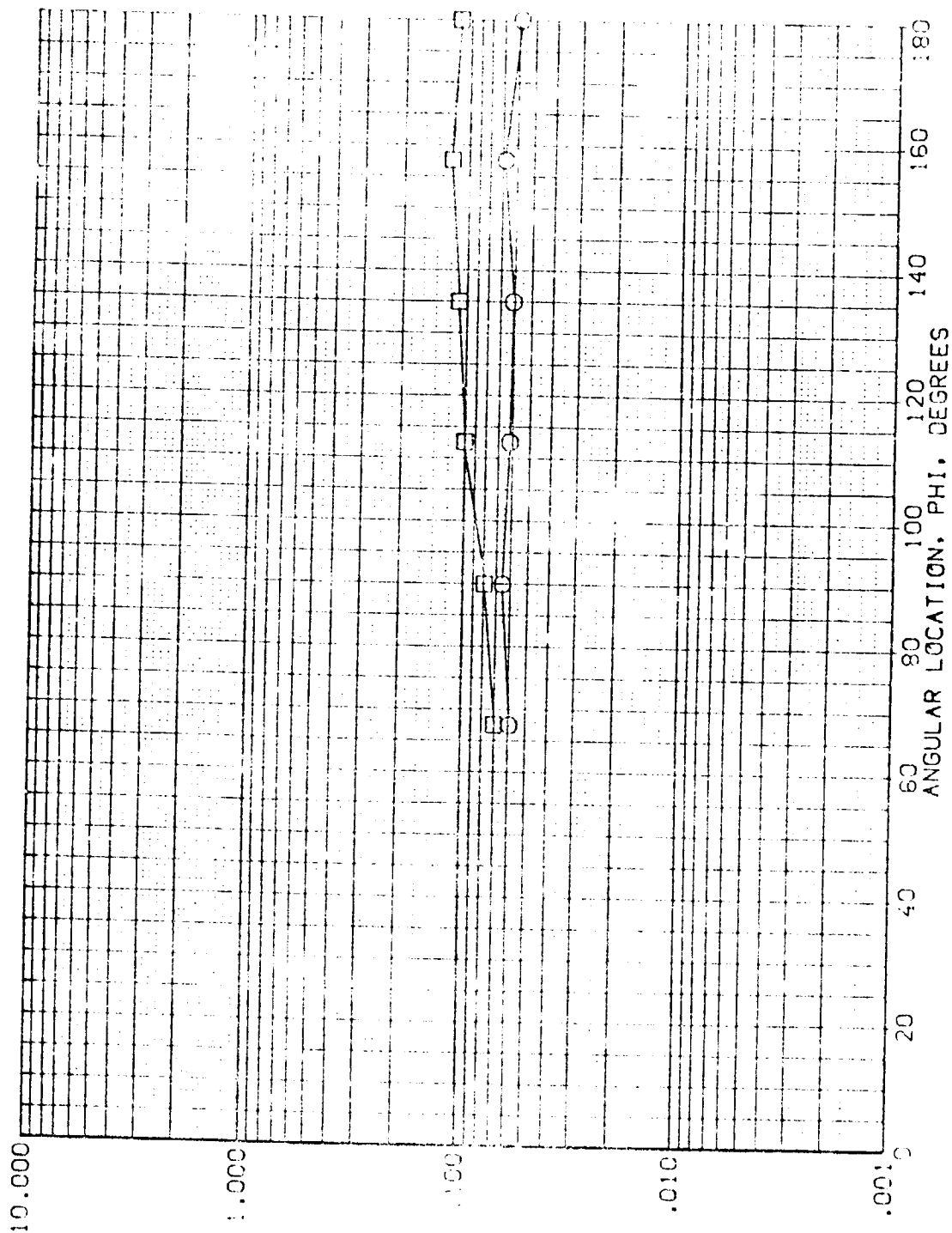


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

$RN/L = 4.569$ $HAW/HT = .850$ $X/L = .600$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT16) IH18 T8
 (RCHT15) IH18 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

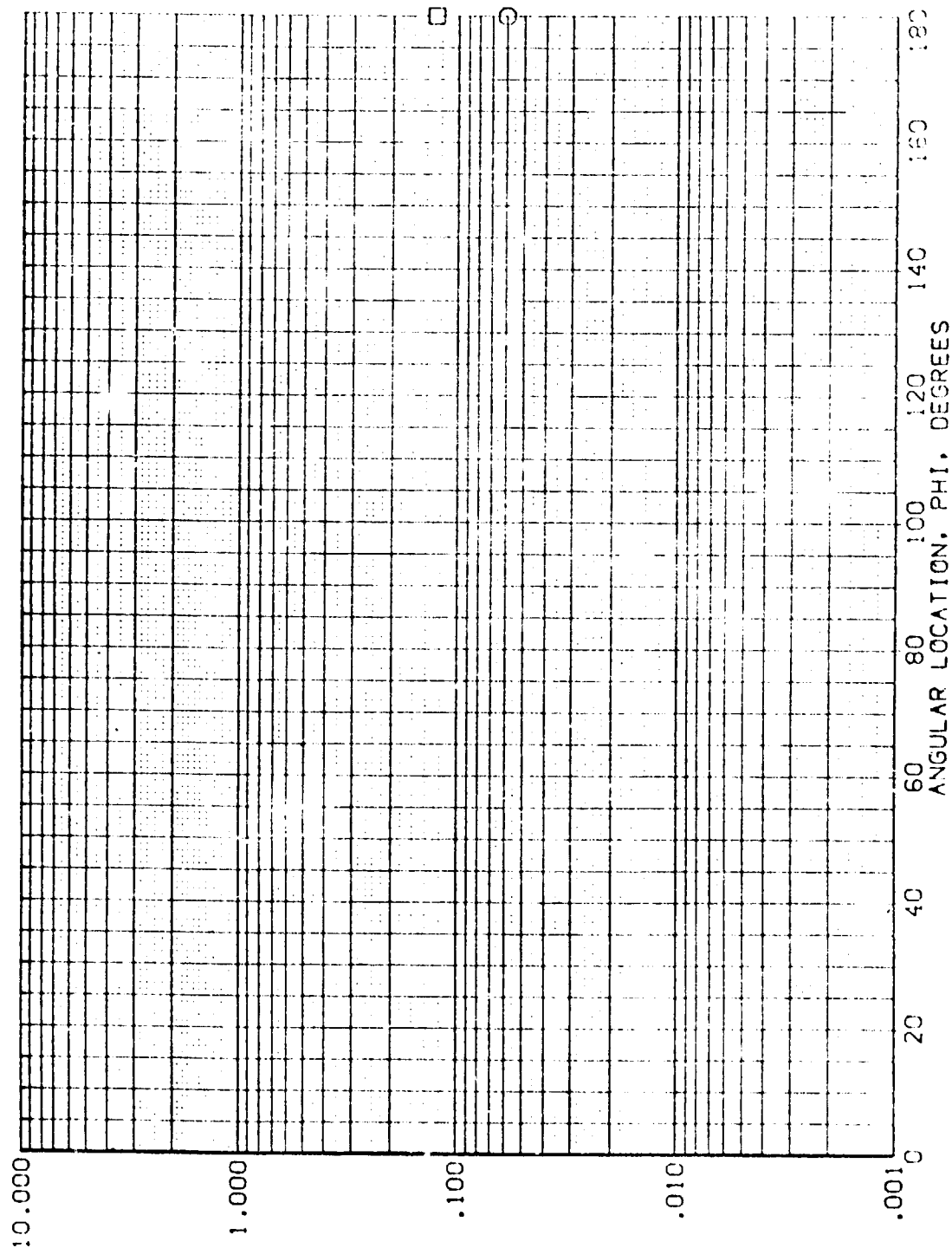


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .650

DATA SET SYMBOL
(R0MT15)
(R0MT15)

CONFIGURATION DESCRIPTION
IH18 TB
IH18 TB

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

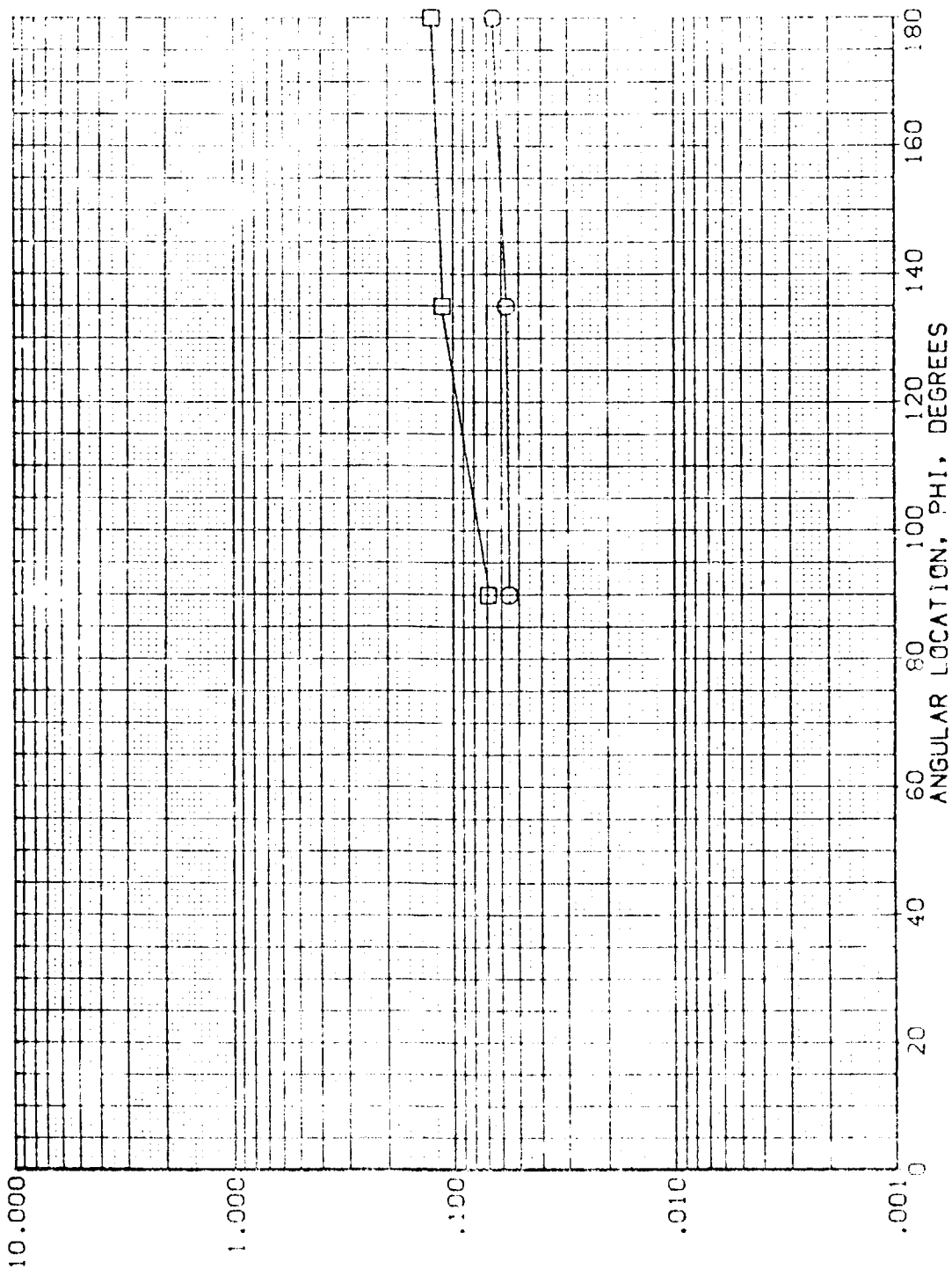


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = .850 X/L = .700

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQNT16) IH18 TB
 (RQNT15) IH18 TB

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

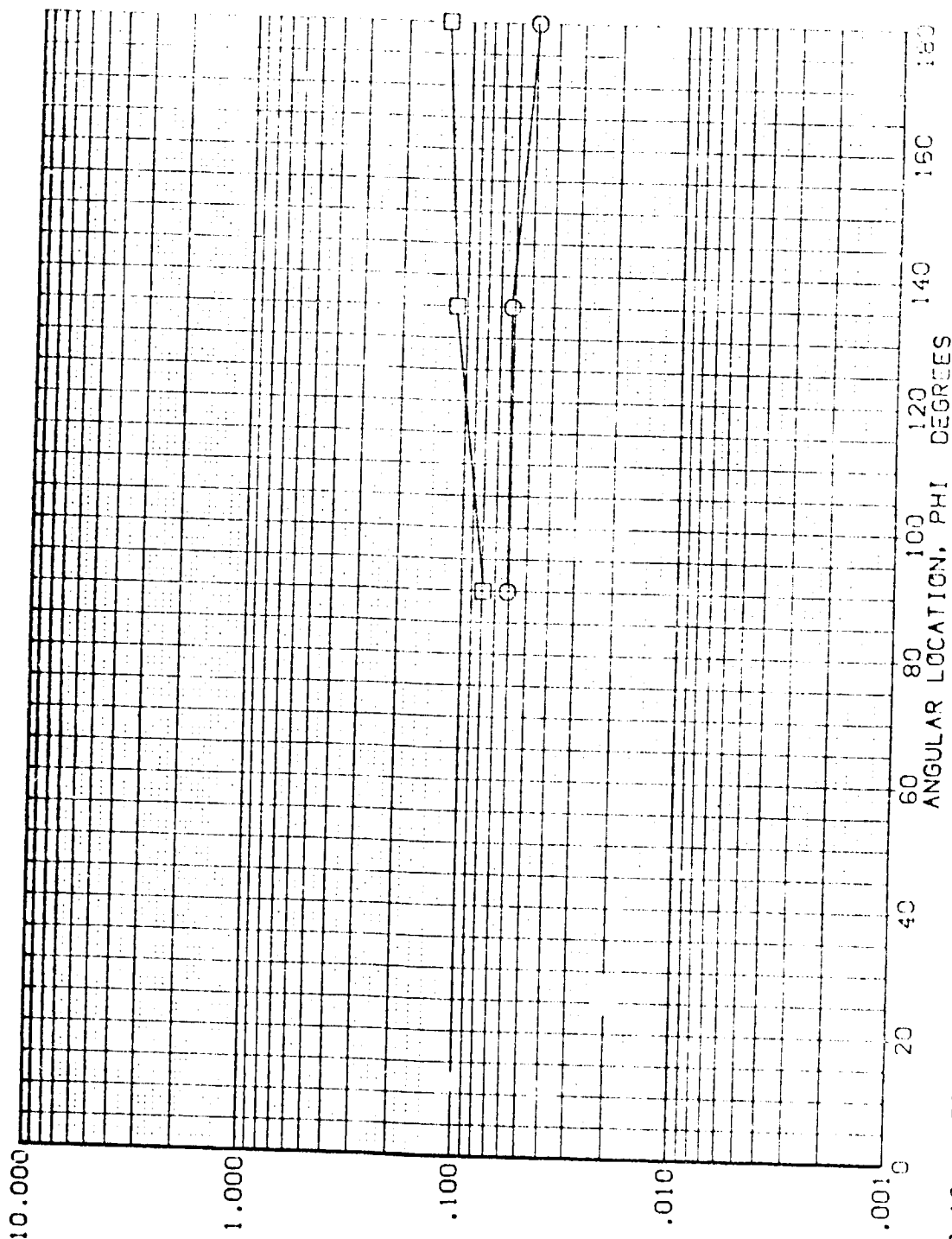


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

$RN/L = 4.569$ $HA/WHT = .850$ $X/L = .800$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT16) T8
 (RMT15) T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/hREF

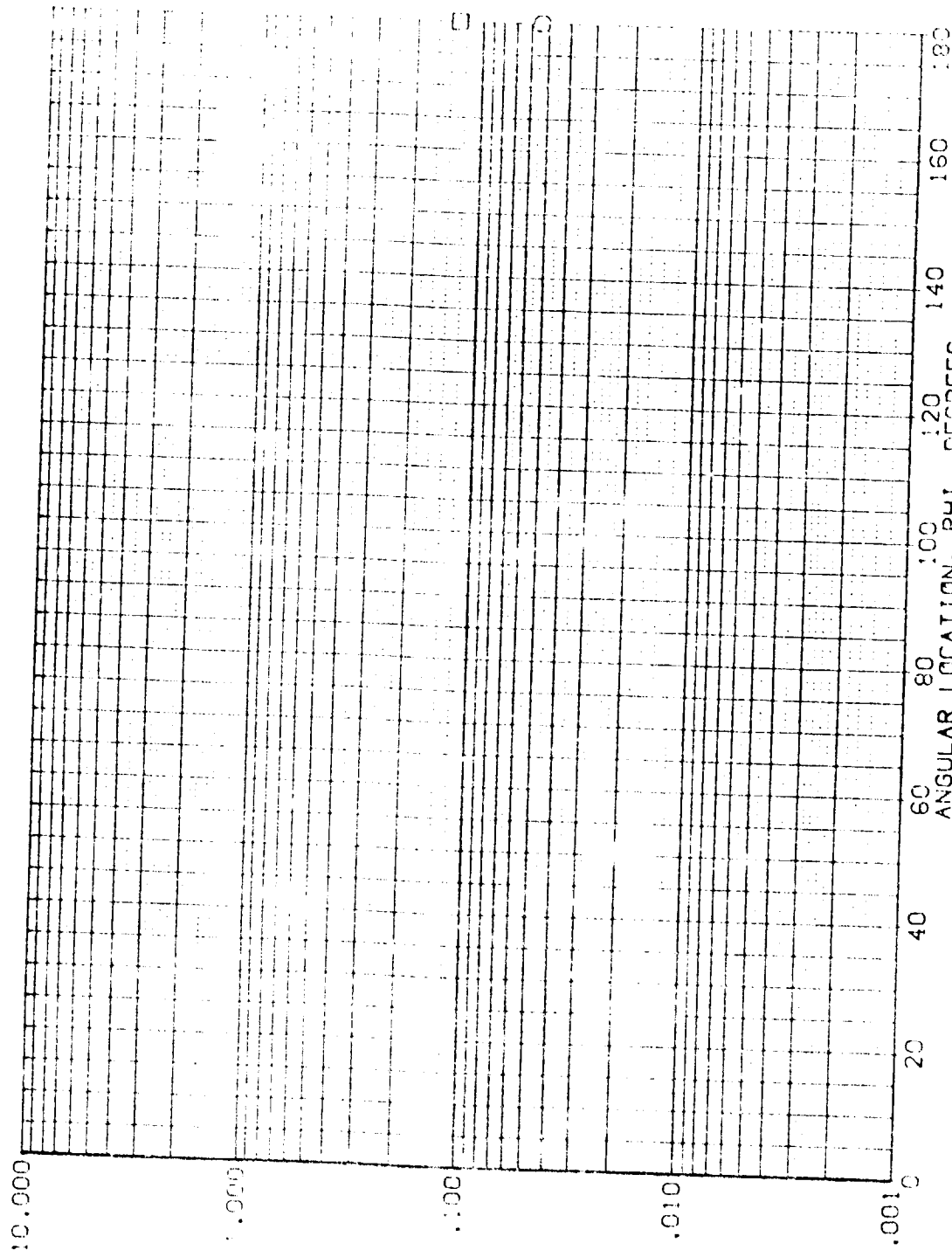


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 hAW/hT = .850 X/L = .900

DATA SET SYMBOL
(RMT16)
(RMT15)

CONFIGURATION DESCRIPTION
IH18 TB
IH18 TB

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

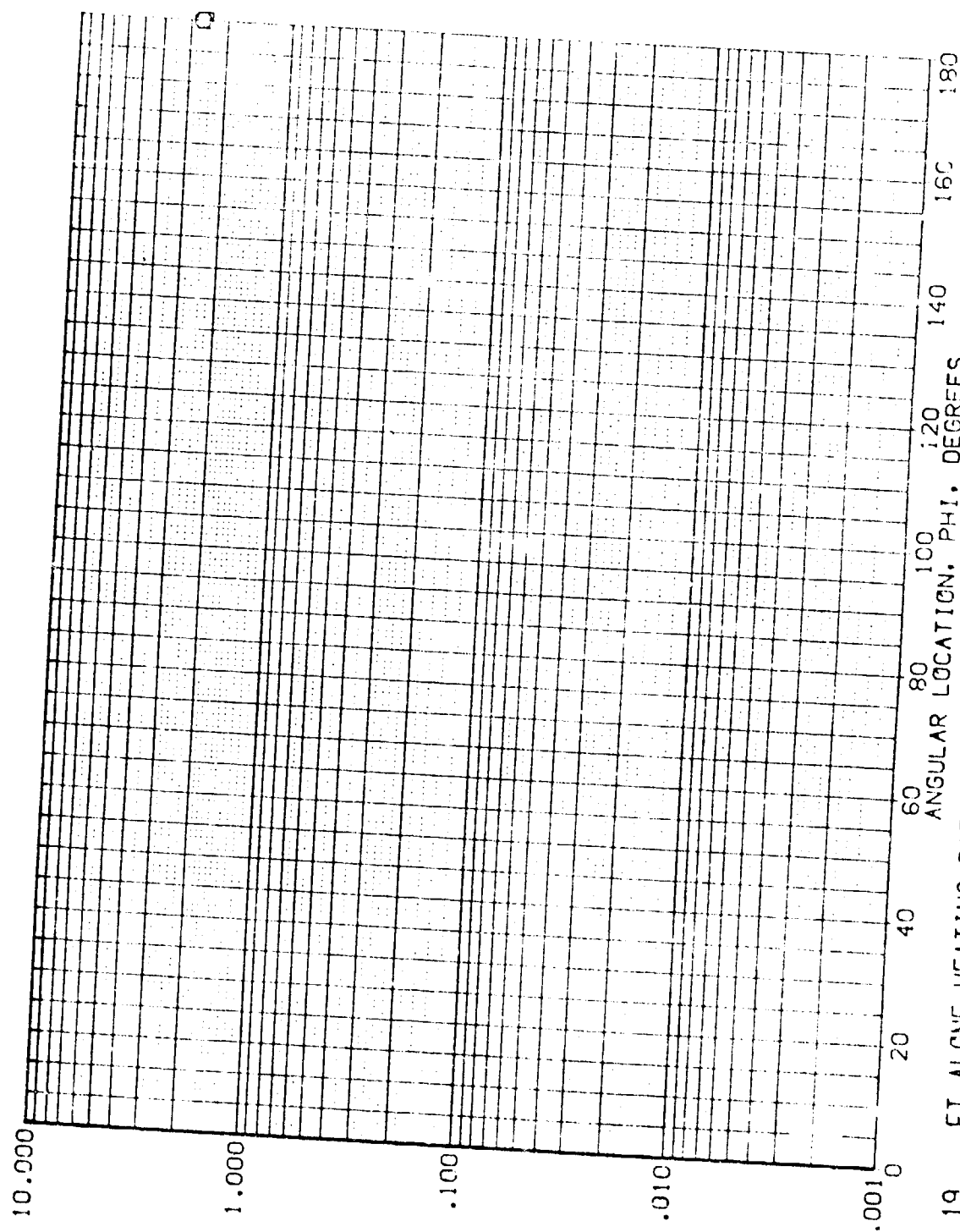


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT16) 18
 (RMT15) 18

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

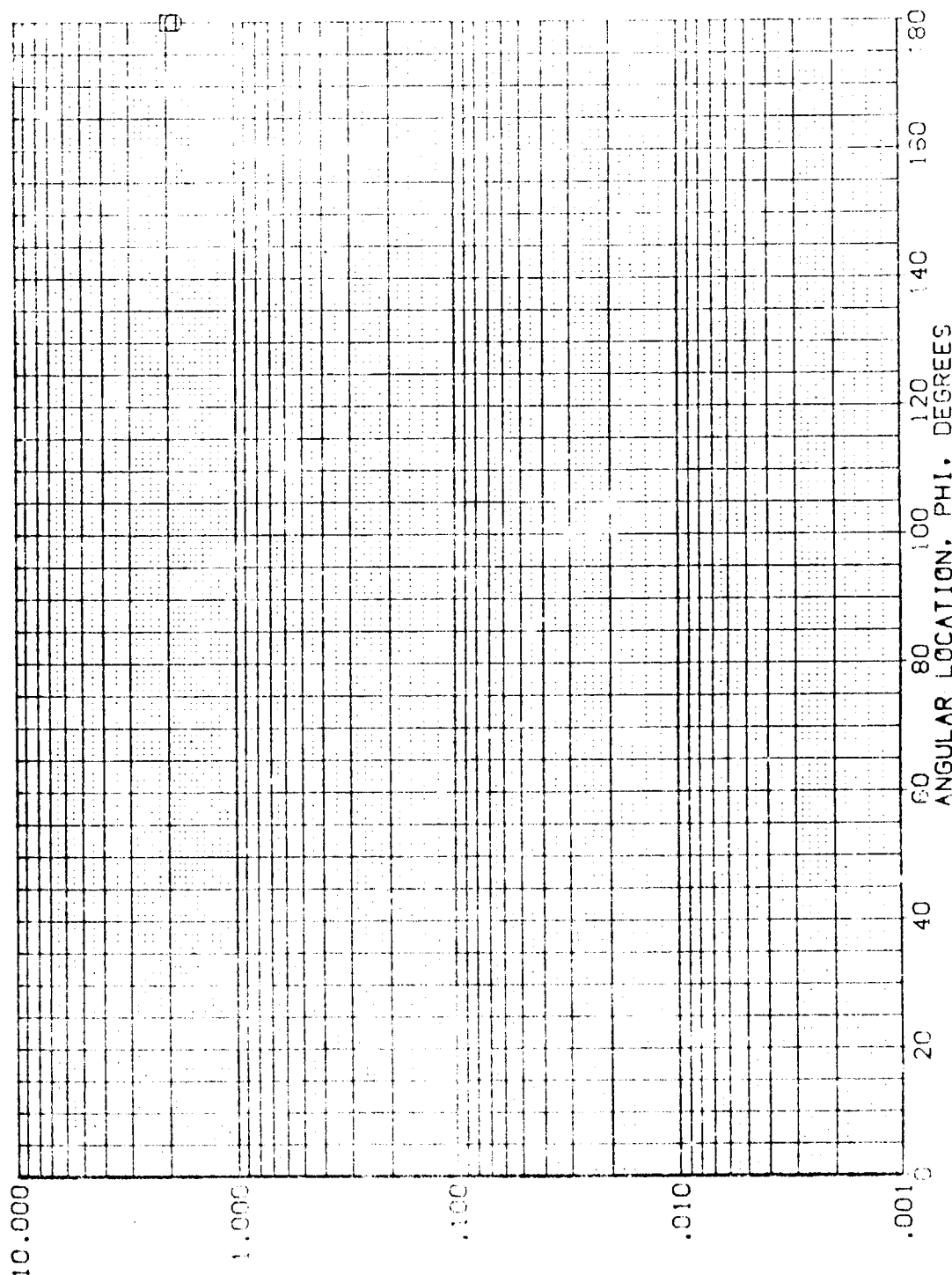


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .010

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL (RMT15) (RMT15) [H18 T8] [H18 T8] CONFIGURATION DESCRIPTION

EXTERNAL TANK
EXTERNAL TANK
BETA .000
ALPHA .000
MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

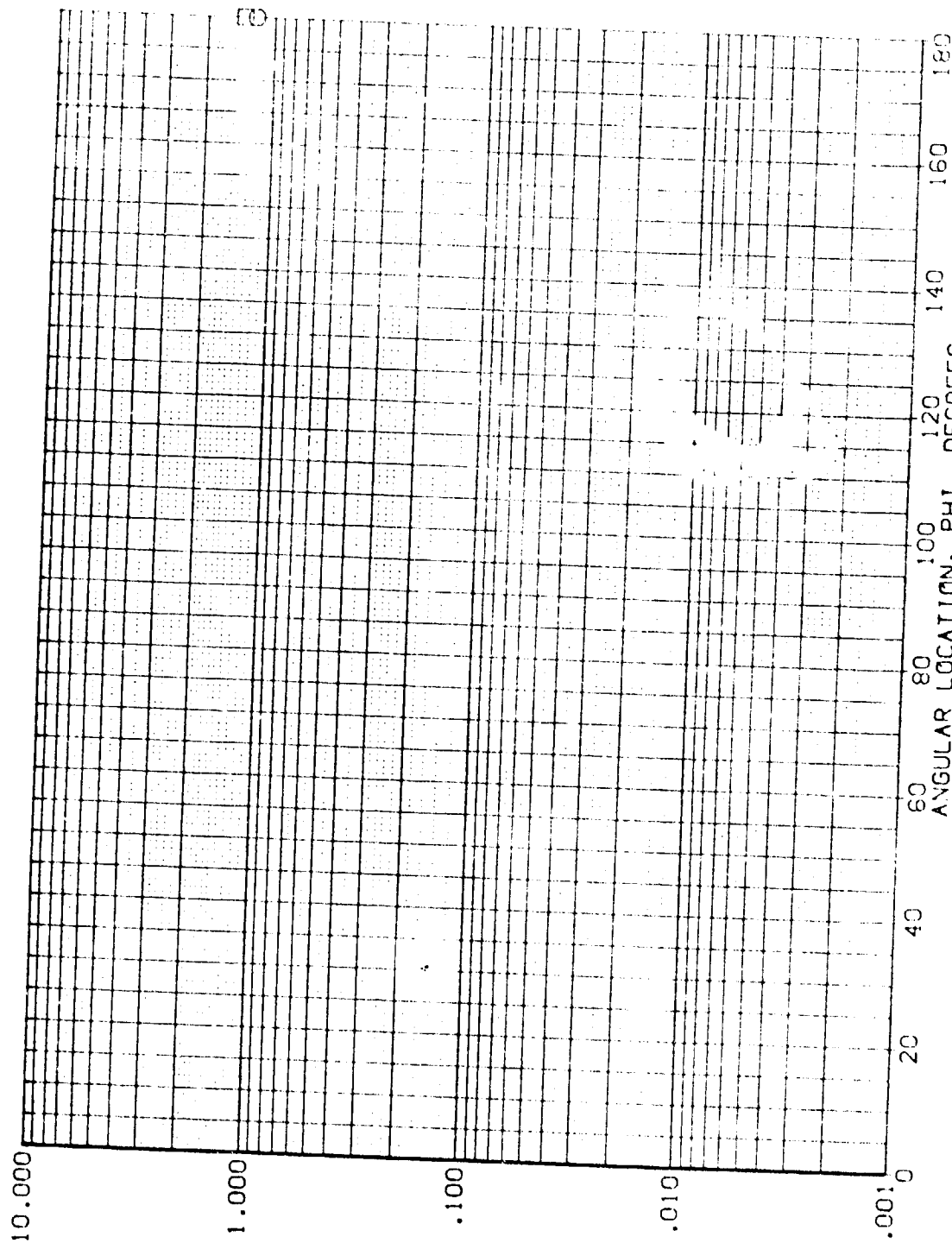


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

$RN/L = 4.569$ $h_{AW}/h_T = 1.000$ $X/L = .020$

DATA SET SYMBOL
(RMT16)
(RMT15)

CONFIGURATION DESCRIPTION
IH18 T8
IH18 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

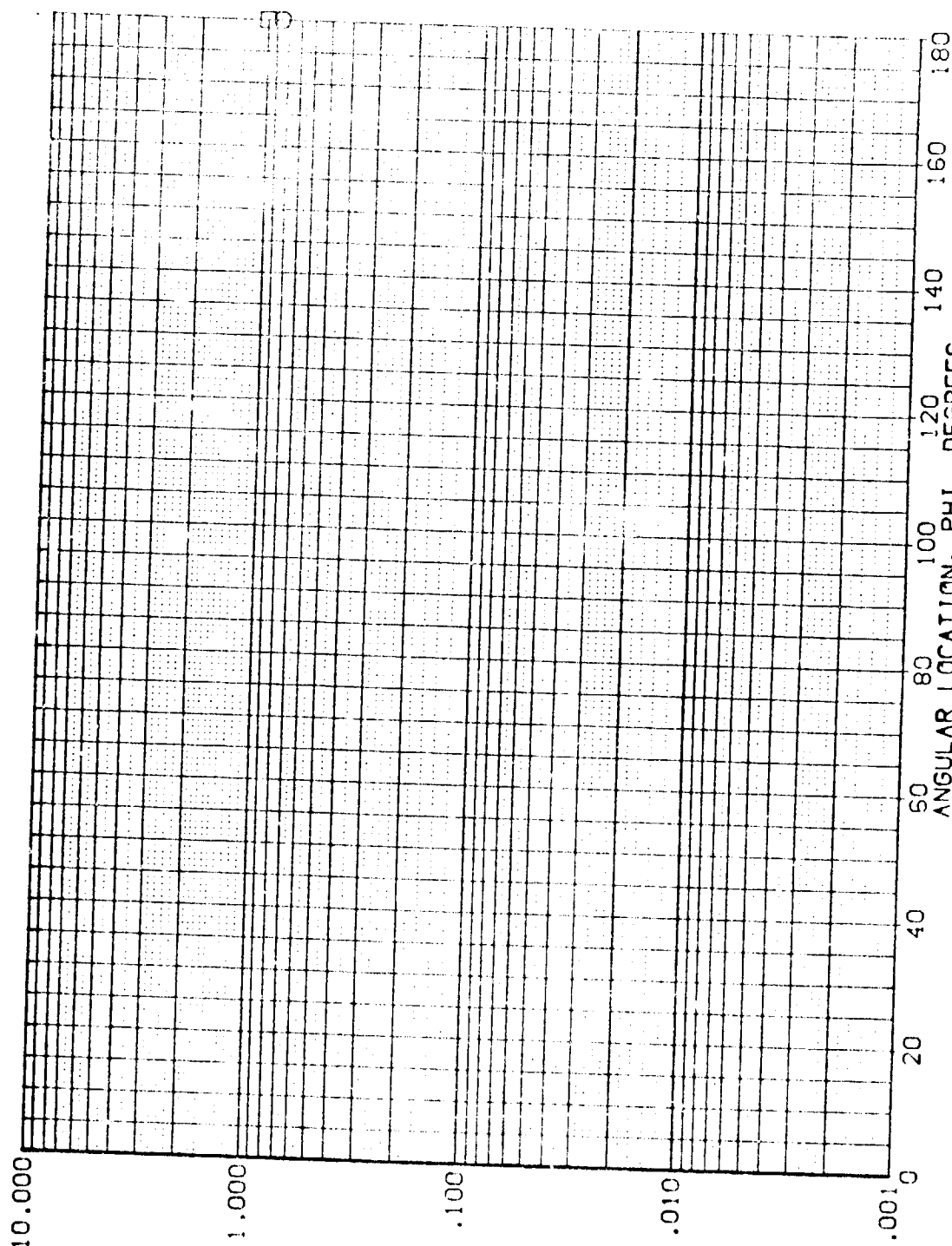


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

$RN/L = 4.569$ $HA/WHT = 1.000$ $X/L = .060$

DATA SET SYMBOL: (RIGHT) 1818 T8
 (RIGHT) 1818 T8

CONFIGURATION DESCRIPTION:
 EXTERNAL TANK
 EXTERNAL TANK

BETA: .000
 ALPHA: .000
 MACH: 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

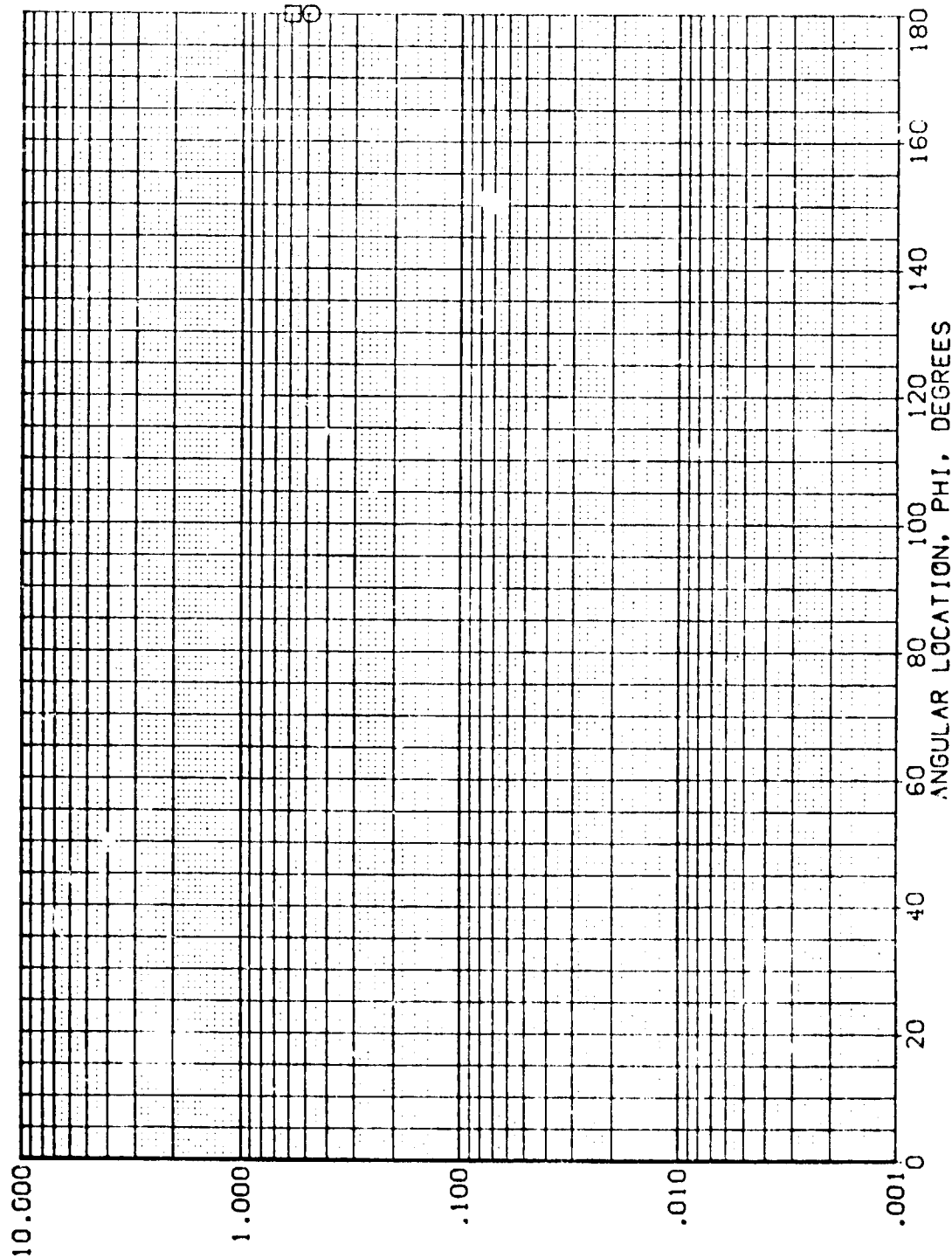


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .100

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT16) (H18 T8
 (R0MT15) (H18 T8

EXTERNAL TANK BETA ALPHA MACH
 EXTERNAL TANK .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

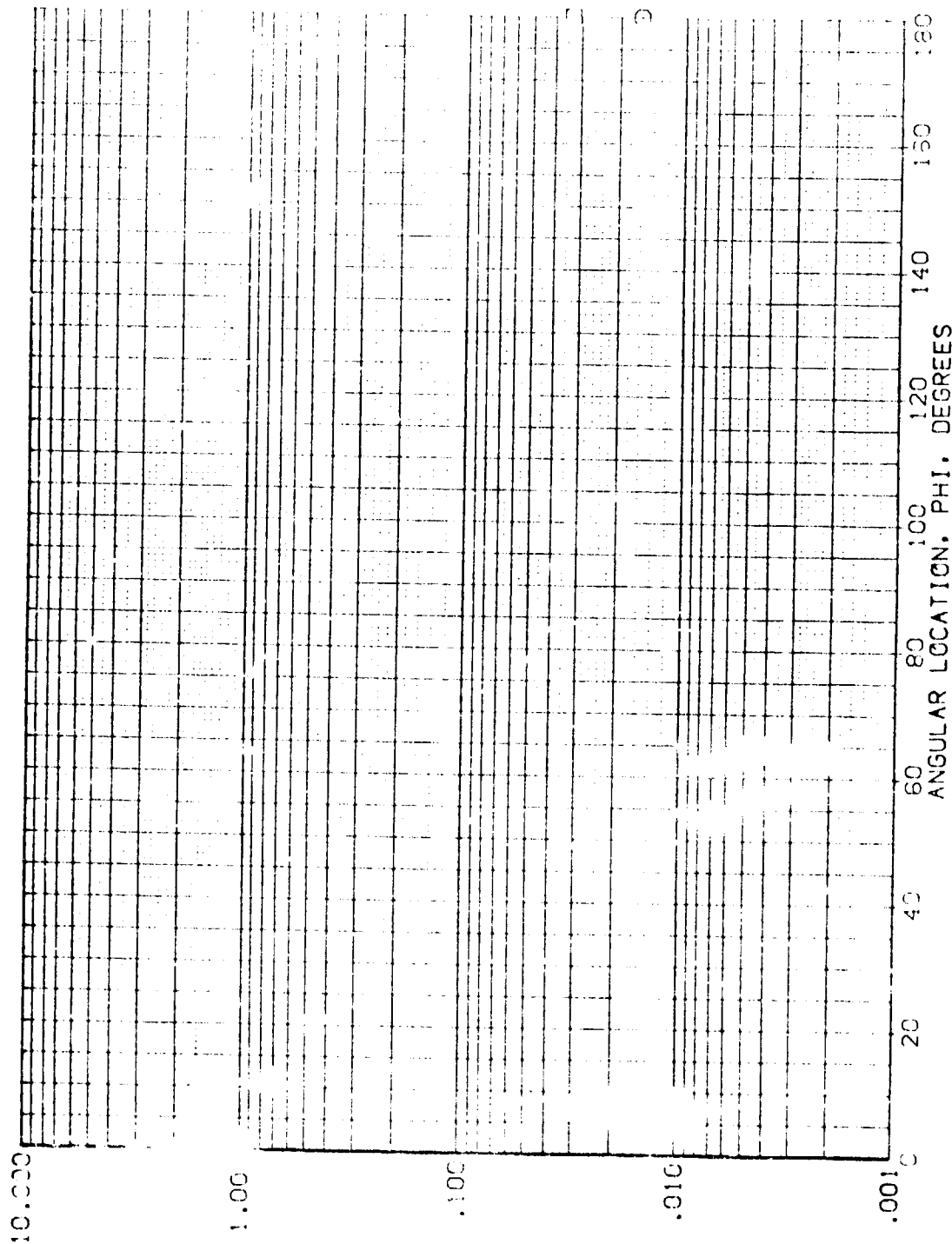


FIG 19 ET ALONE LATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 h_{AW}/h_{REF} = 1.000 X/L = .150

DATA SET SYMBOL (904716)
 (P20413)
 IM18 T8
 IM18 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

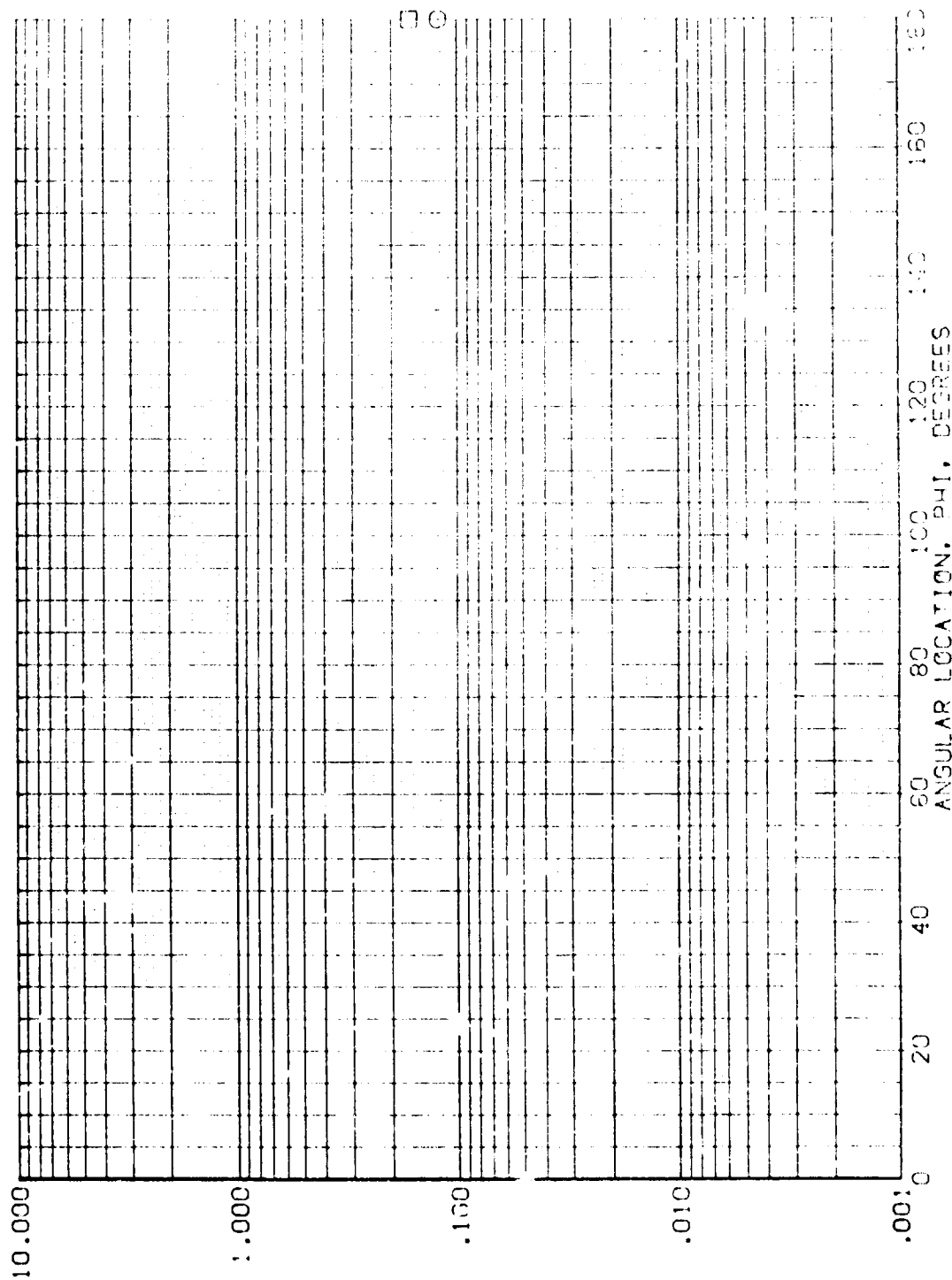


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HTE = 1.000 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT15) B IM18 TB
 (RMT15) IM18 TB

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

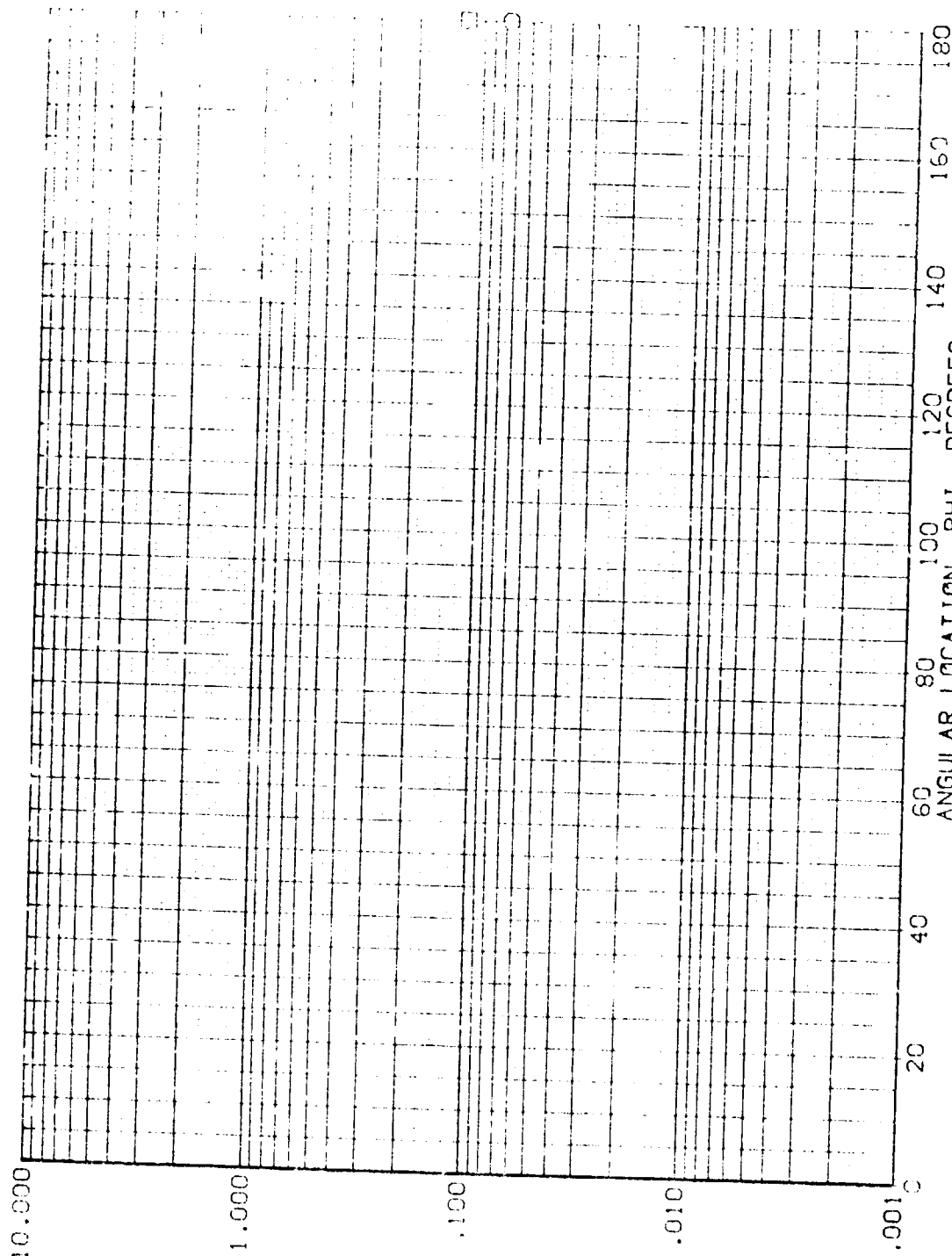


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 $h_{AW}/h_T = 1.000$ $x/L = .250$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT16) [H16] T8
 (RMT15) [H15] T8

EXTERNAL TANK MACH
 EXTERNAL TANK .000 6.000
 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

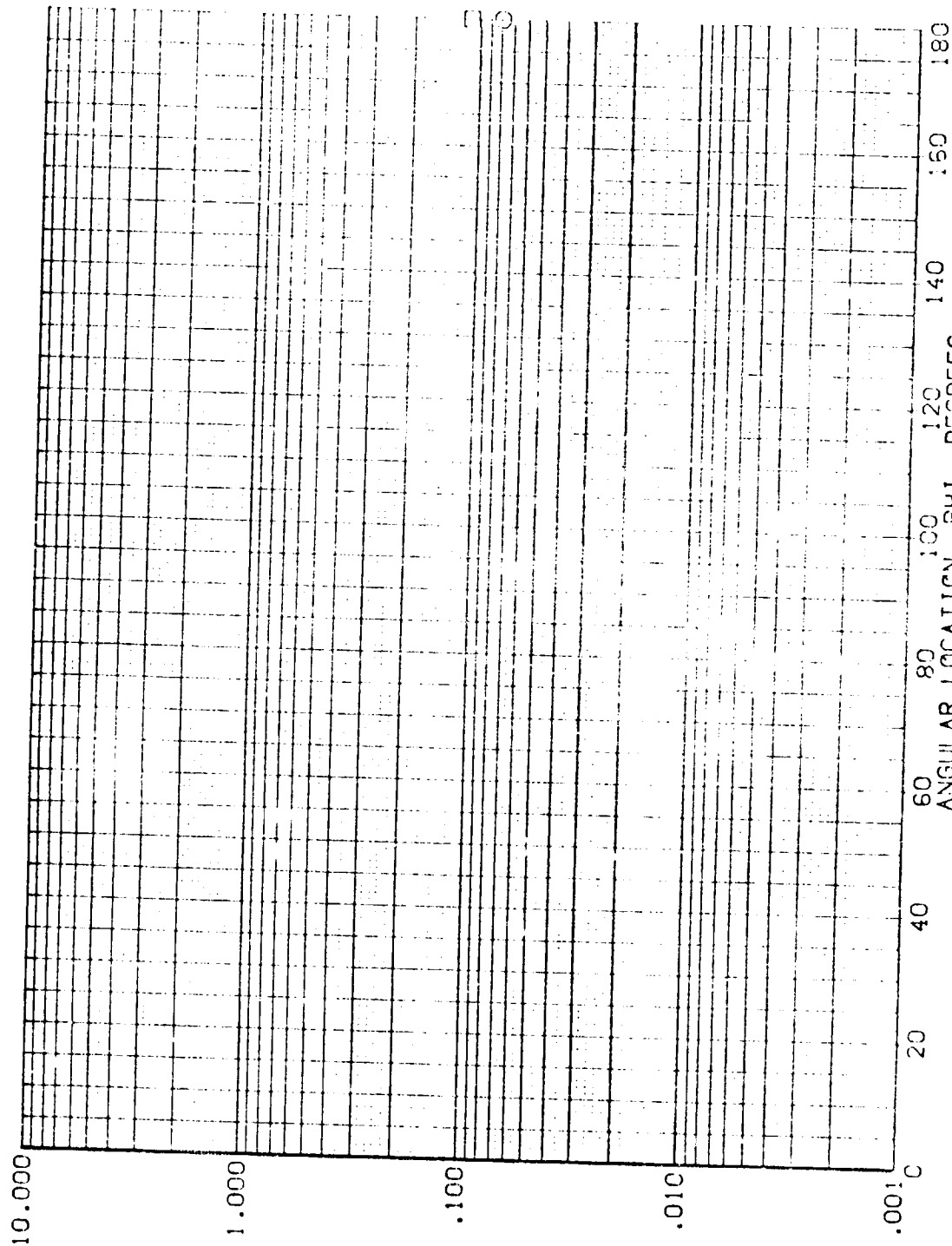


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.562 h_{AW}/h_{REF} = 1.000 X/L = .300

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(RCHT15)
(RCHT15)

CONFIGURATION DESCRIPTION
T8
T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
-5.000

ALPHA
.000
5.000

MACH
5.000
5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

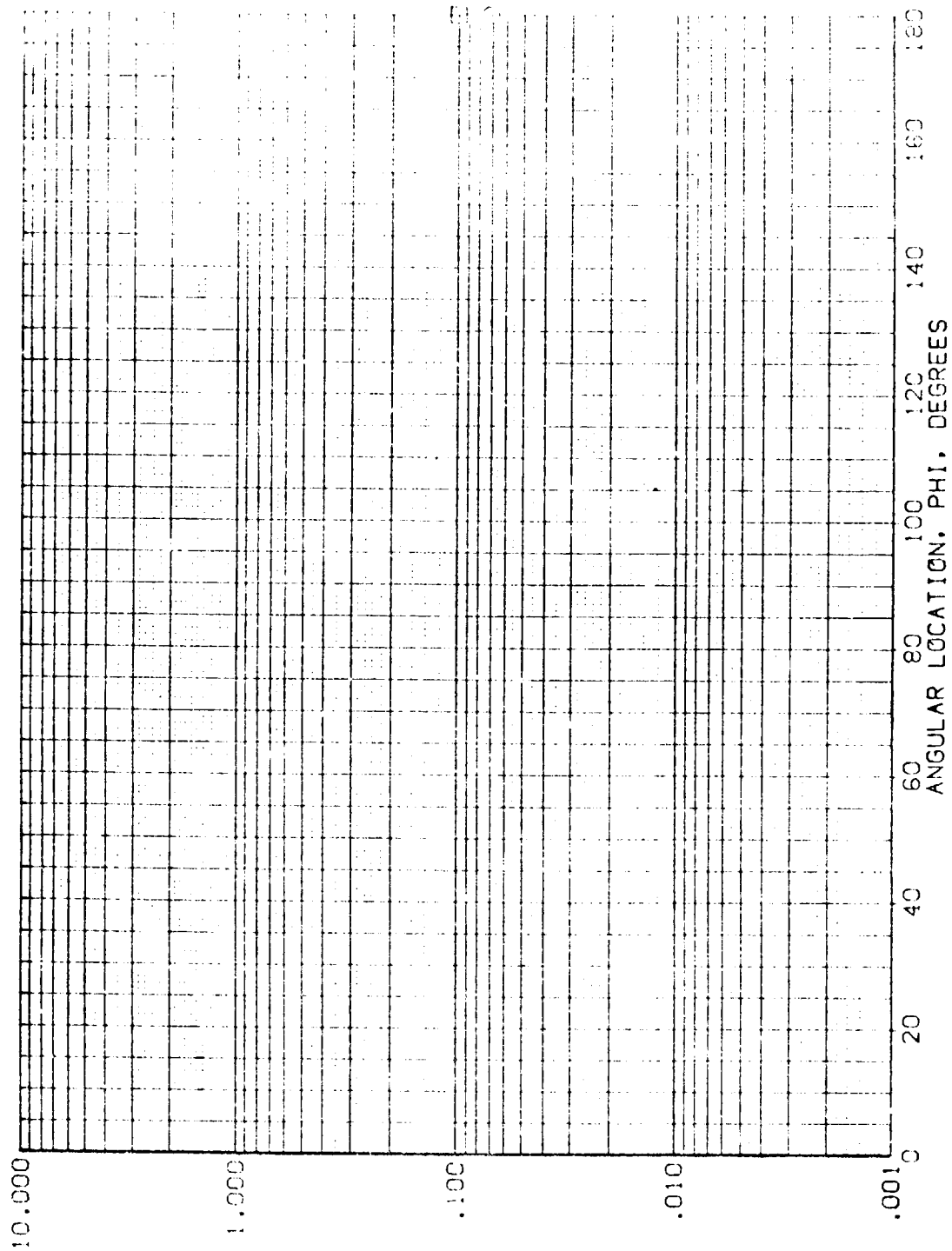


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .350

DATA SET SYMBOL (RQMT16) (RQMT15) ☐ ☐

CONFIGURATION DESCRIPTION
[H18 T8]
[H18 T8]

EXTERNAL TANK
EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

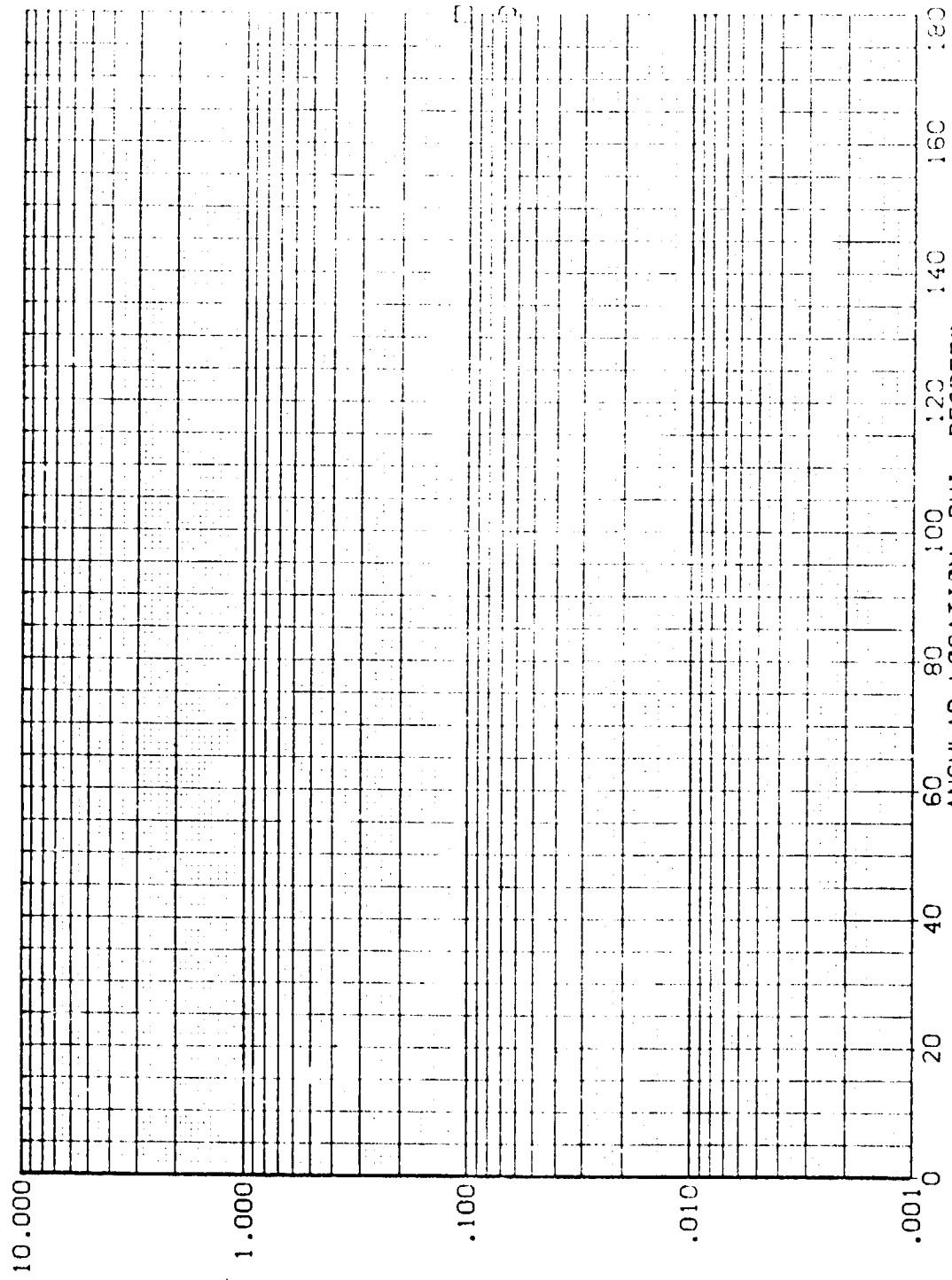


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL (RMT16) (RMT15) B
 CONFIGURATION DESCRIPTION IH18 TB IH18 TB
 EXTERNAL TANK EXTERNAL TANK
 BETA .000 .000 ALPHA .000 -5.000 MACH 6.000 6.000

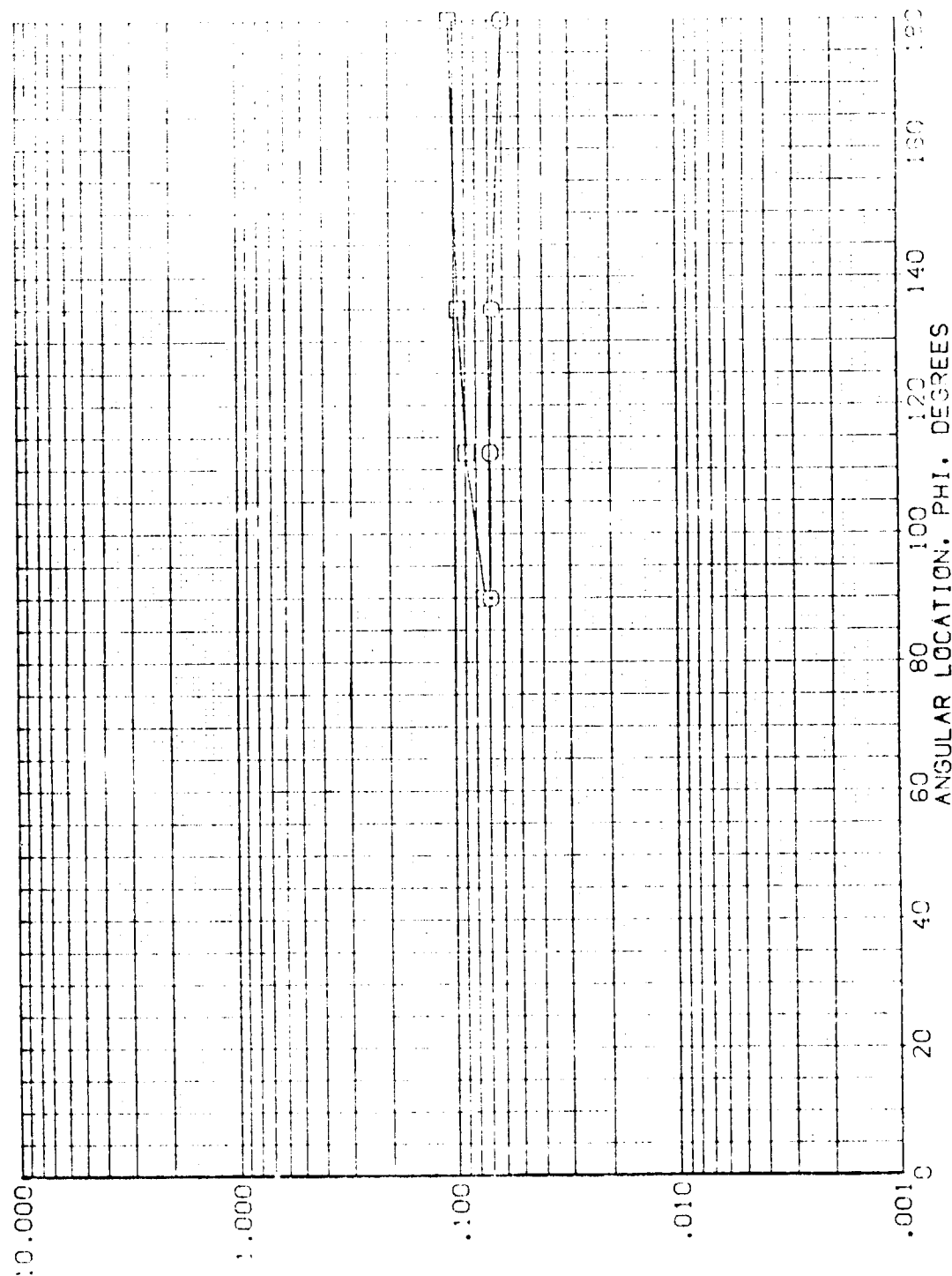


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT:6) IN18 TB
 (RMT:5) IN18 TB

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

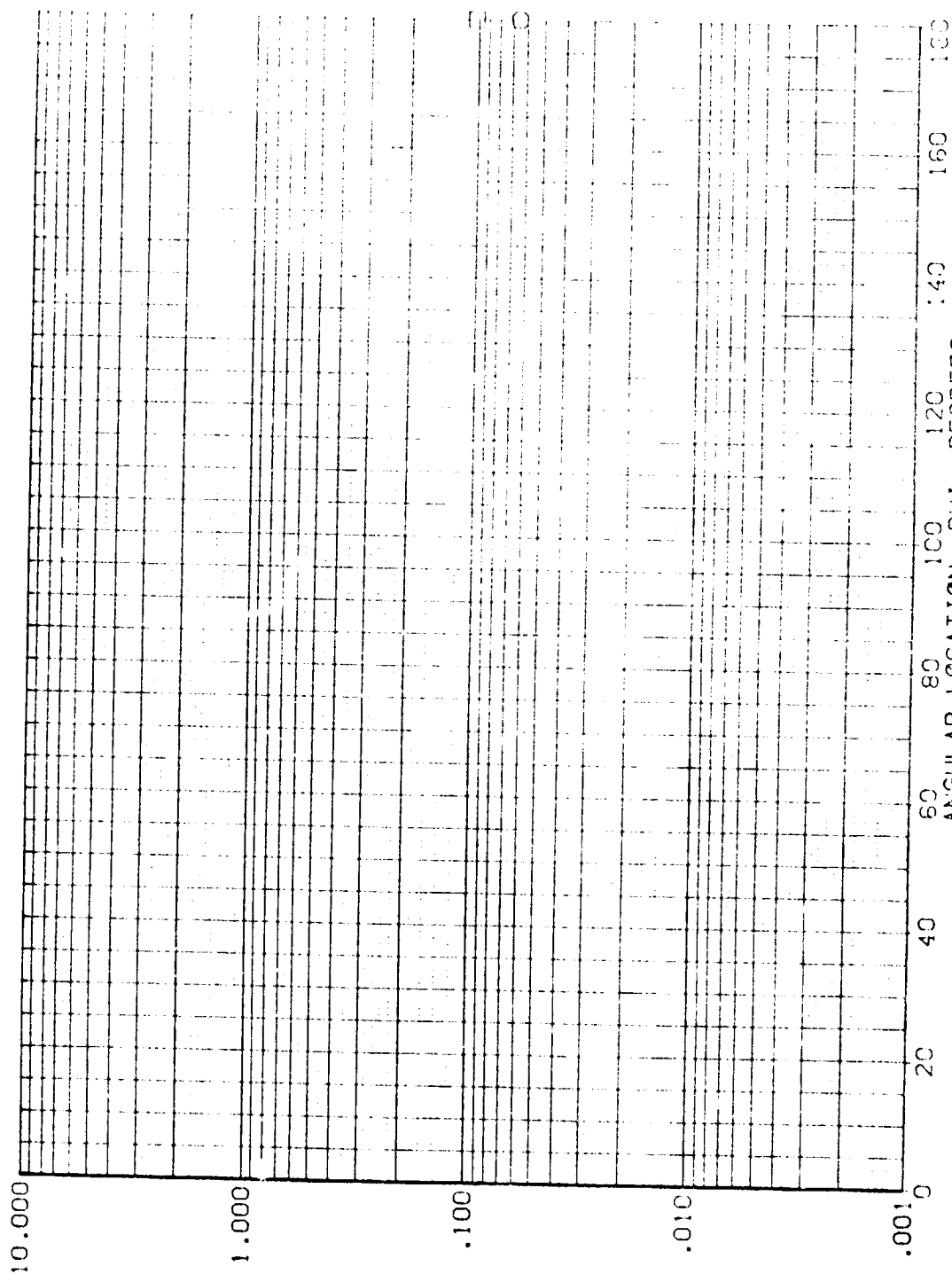


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .425

DATA SET SYMBOL (RQMT16) (RQMT15) (RQMT14) (RQMT13) (RQMT12) (RQMT11) (RQMT10) (RQMT9) (RQMT8) (RQMT7) (RQMT6) (RQMT5) (RQMT4) (RQMT3) (RQMT2) (RQMT1)

CONFIGURATION DESCRIPTION

EXTERNAL TANK
EXTERNAL TANK
BETA .000
ALPHA .000
MACH 5.000
5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

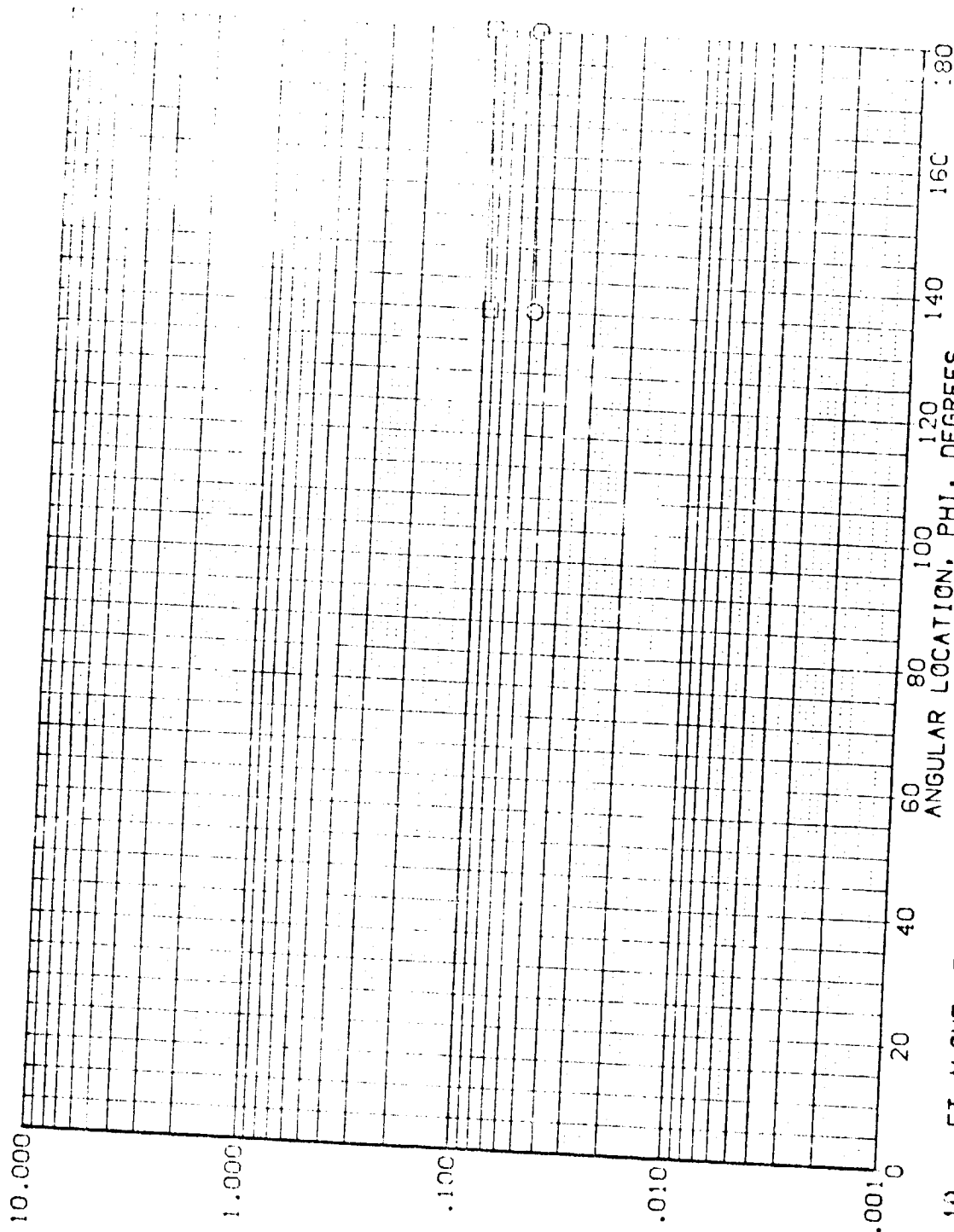


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS
 $RN/L = 4.569$ $HA/W/HT = 1.000$ $X/L = .450$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCMT15) 1H18 T8
 (RCMT15) 1H18 T6

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

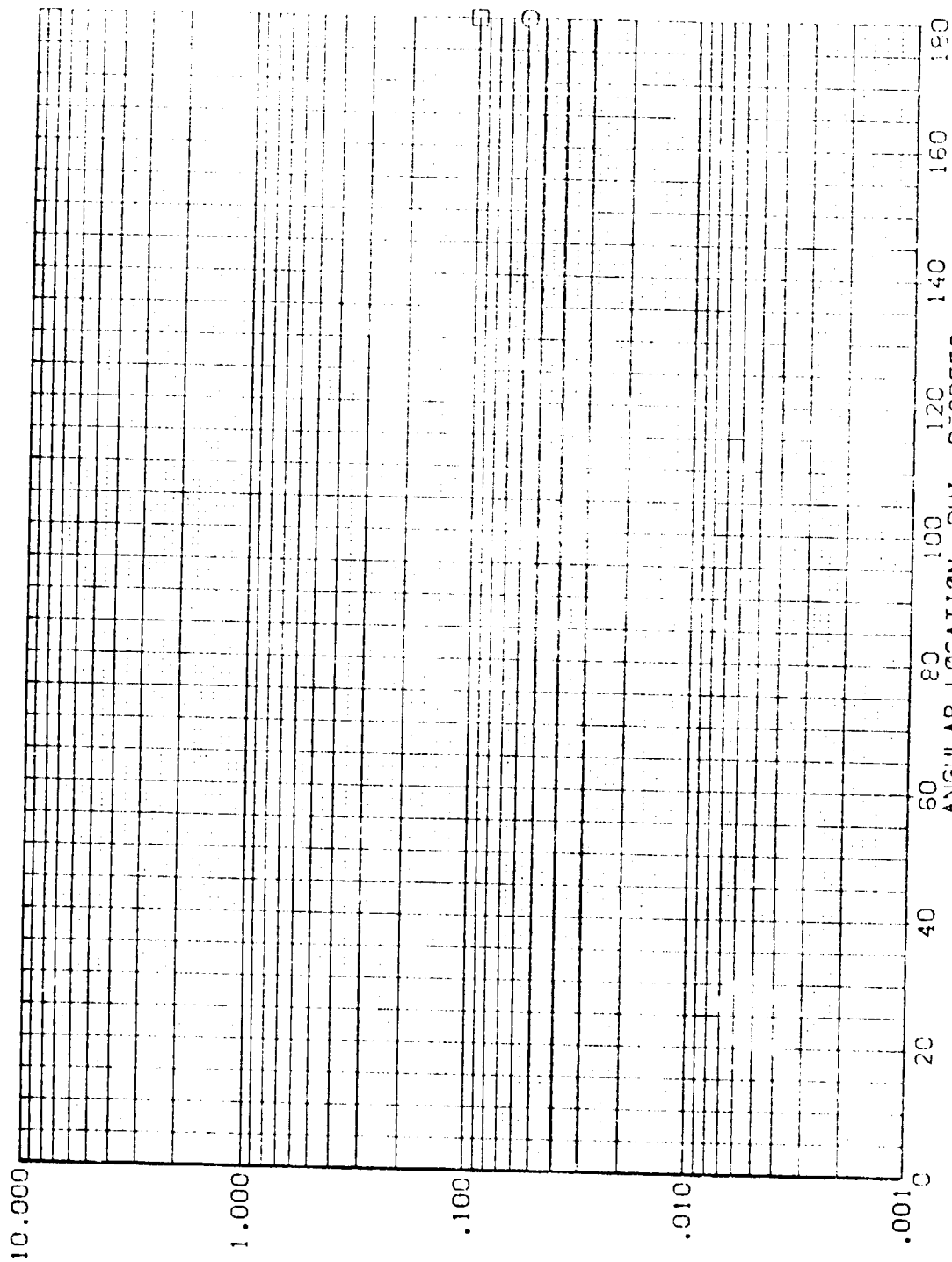


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .475

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CONT:6) 8 I119 T8
 (CONT:5) I118 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

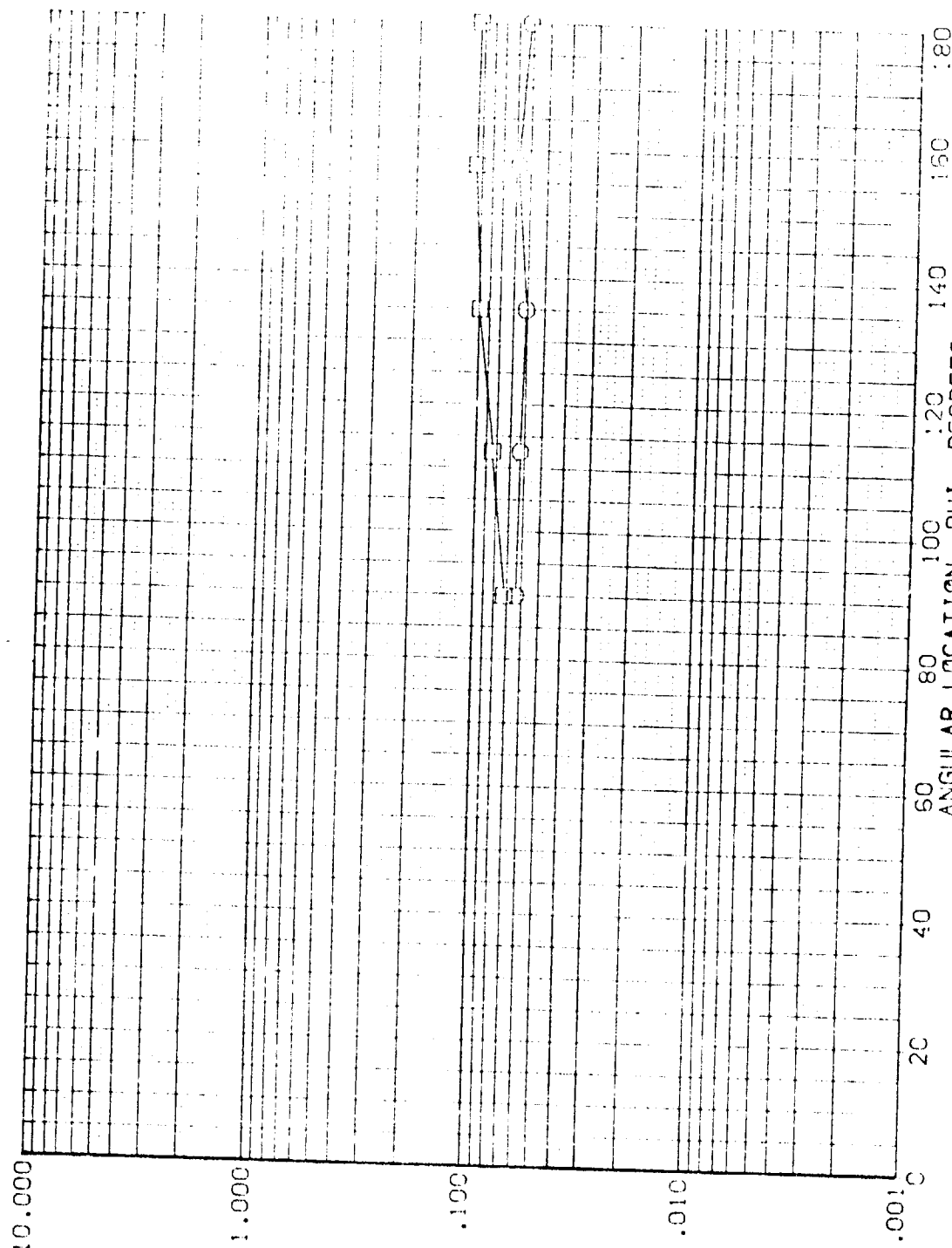


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

$RN/L = 4.569$ $HAU/HT = 1.000$ $X/L = .500$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R00116) I118 T8
 (R00116) I118 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

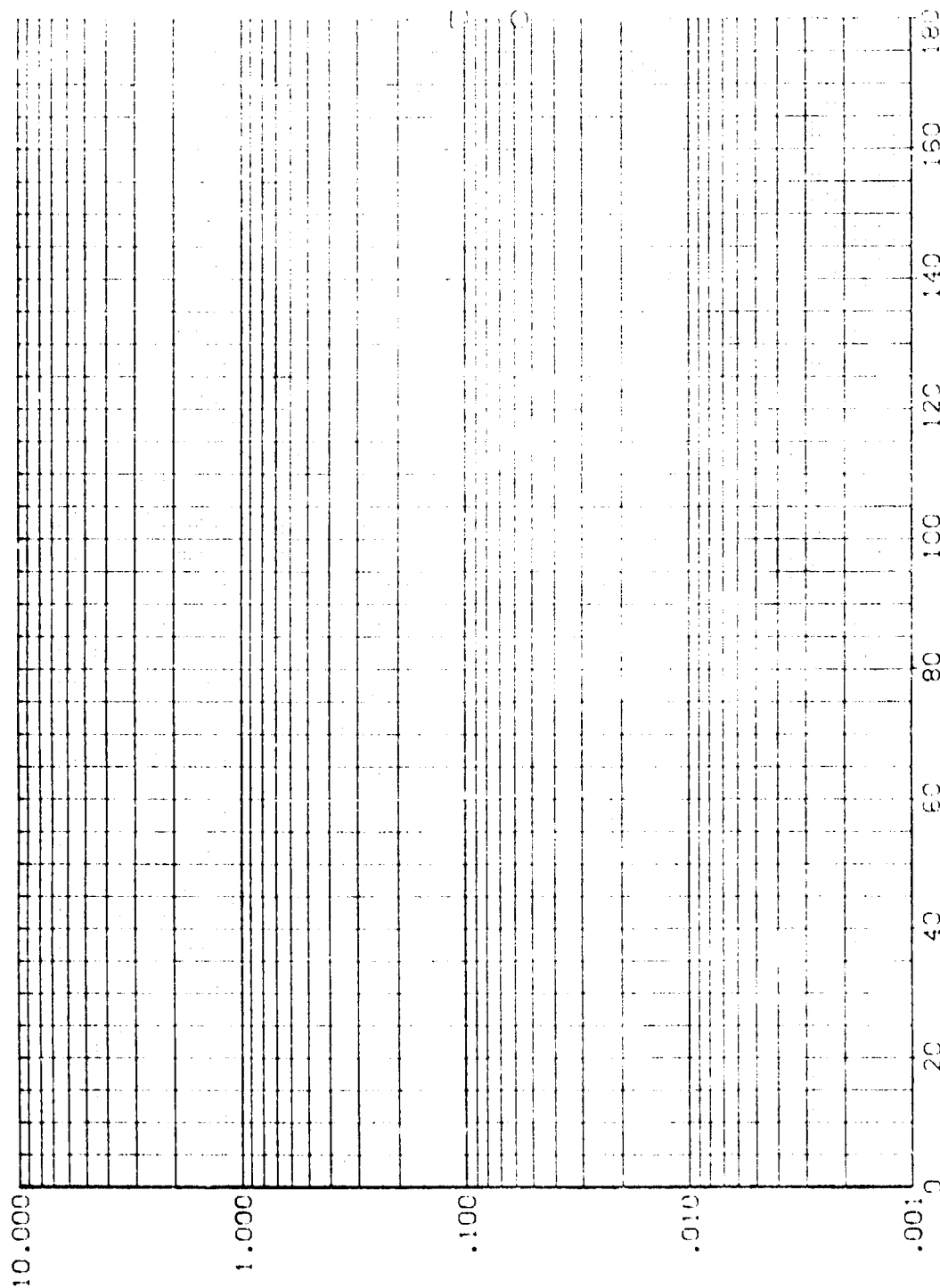


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .525

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL (P00T15) (P00T15) 8
 CONFIGURATION DESCRIPTION (M18 T8) (M18 T8)
 EXTERNAL TANK EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 5.000 5.000

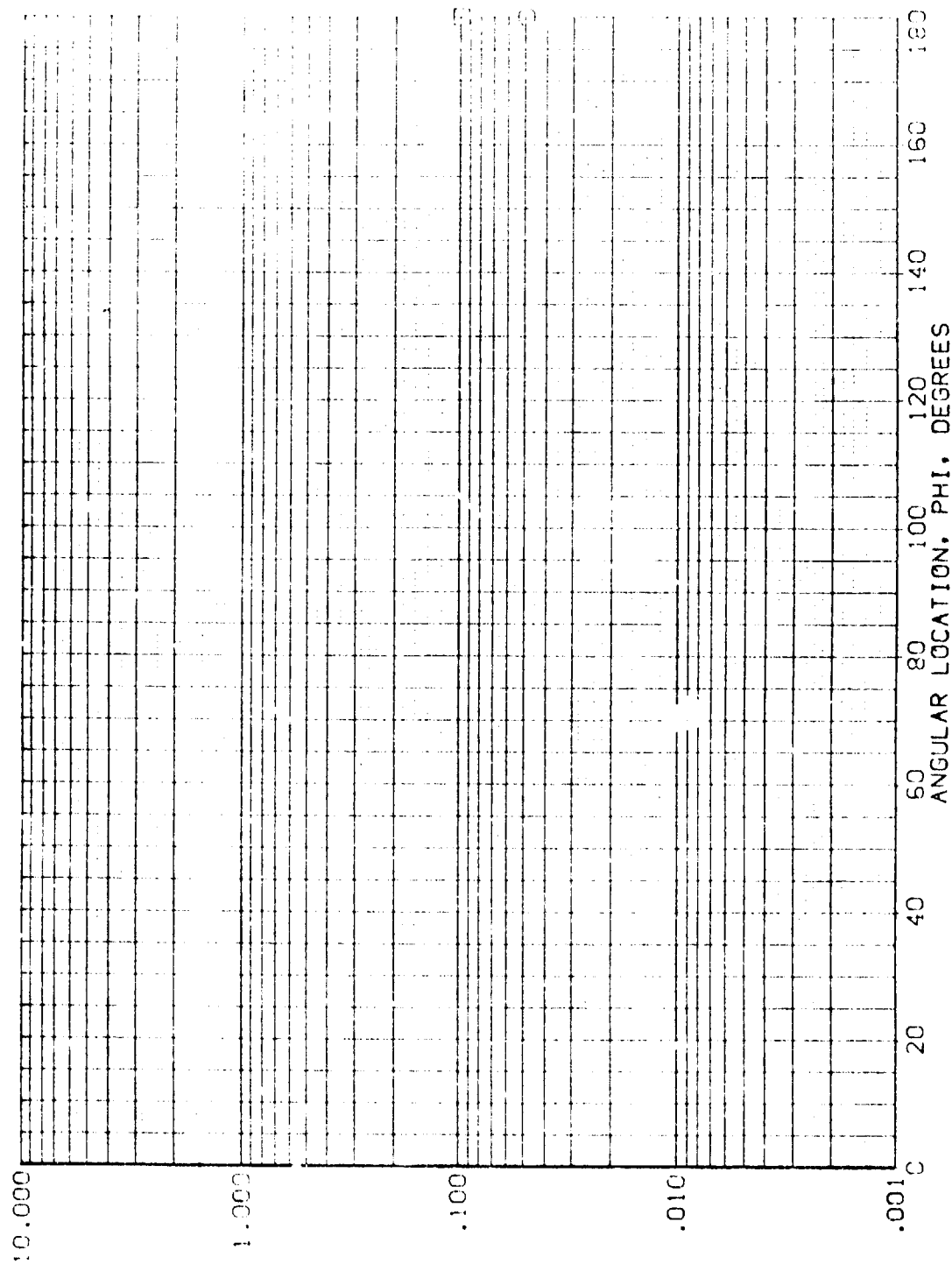


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .550

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL (RIGHT) (LEFT) CONFIGURATION DESCRIPTION (RIGHT) (LEFT) BETA ALPHA MACH
 1 18 19 EXTERNAL TANK EXTERNAL TANK .000 .000 -5.000 6.000 6.000

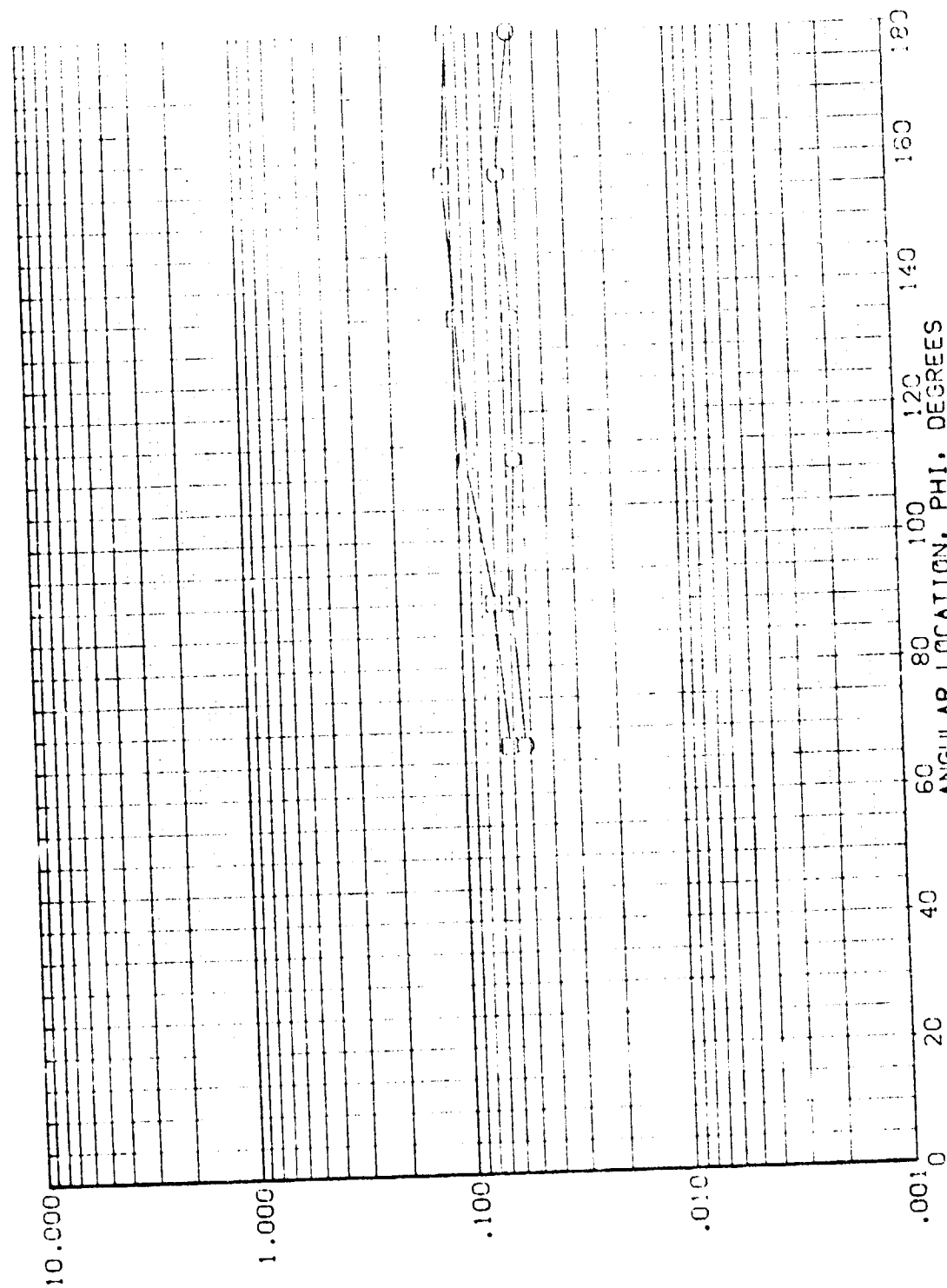


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .600

DATA SET SYMBOL. CONFIGURATION DESCRIPTION
 (RMT16) T8
 (RMT15) T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

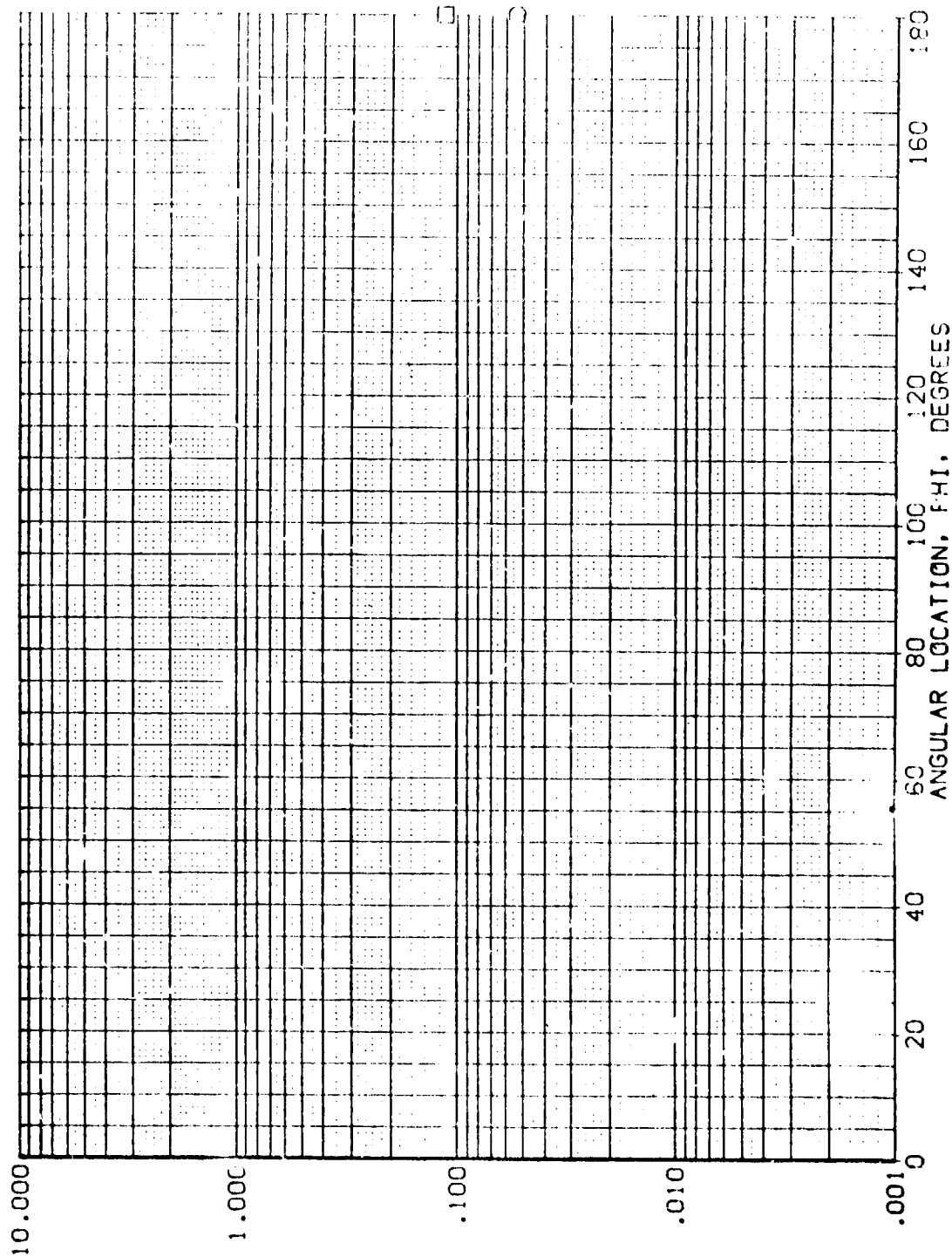


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .650

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M115) I418 T8
 (R0M115) I418 -3

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

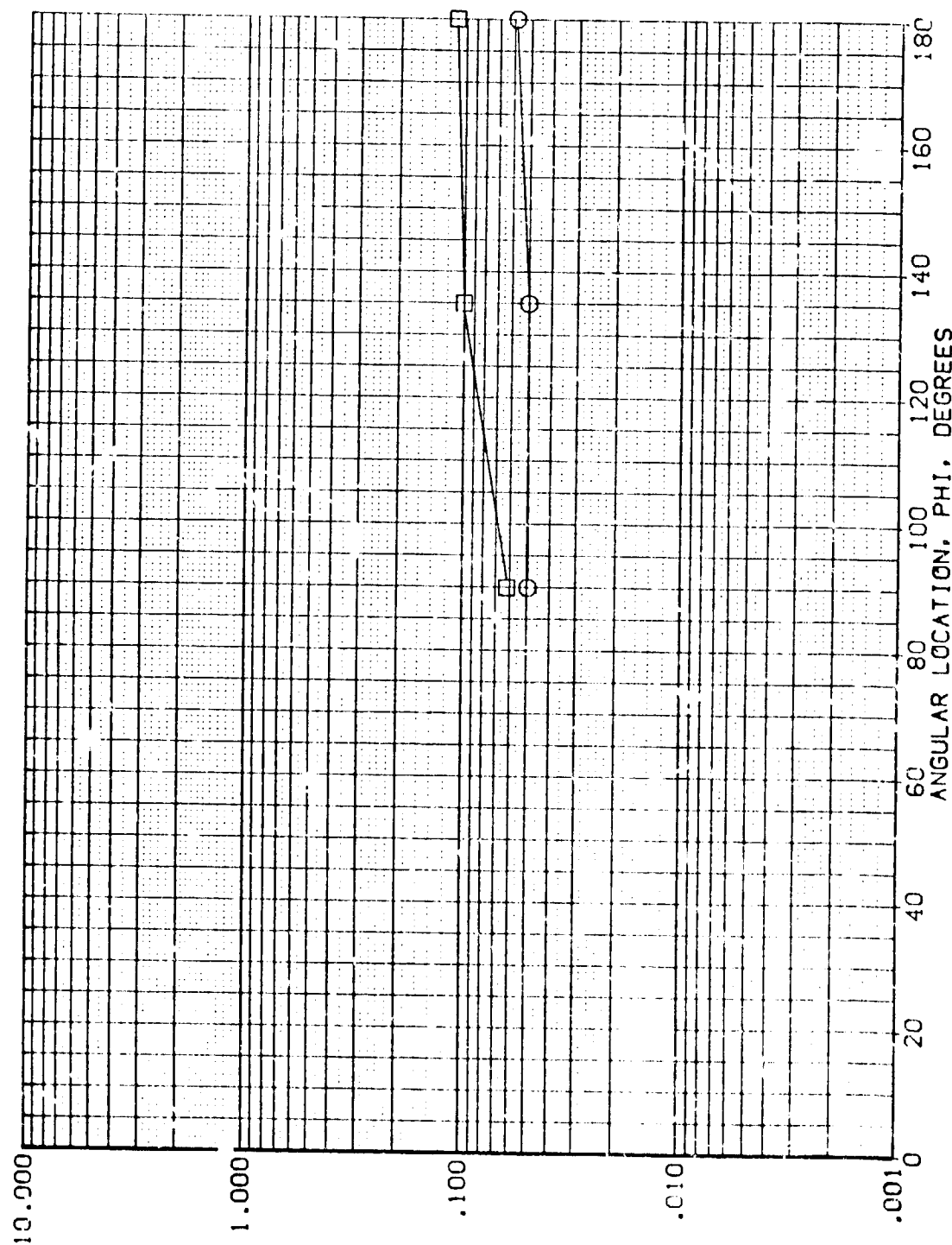


FIG 19 ET ALONE HEATING RATE VARIATION WITH ϕ - NO TRIPS

SN/L = 4.569 HAW/HT = 1.000 X/L = .700

DATA SET SYMBOL
(R0MT16)
(R0MT15)

CONFIGURATION DESCRIPTION
IH18 TB
IH18 TB

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS - H/HREF

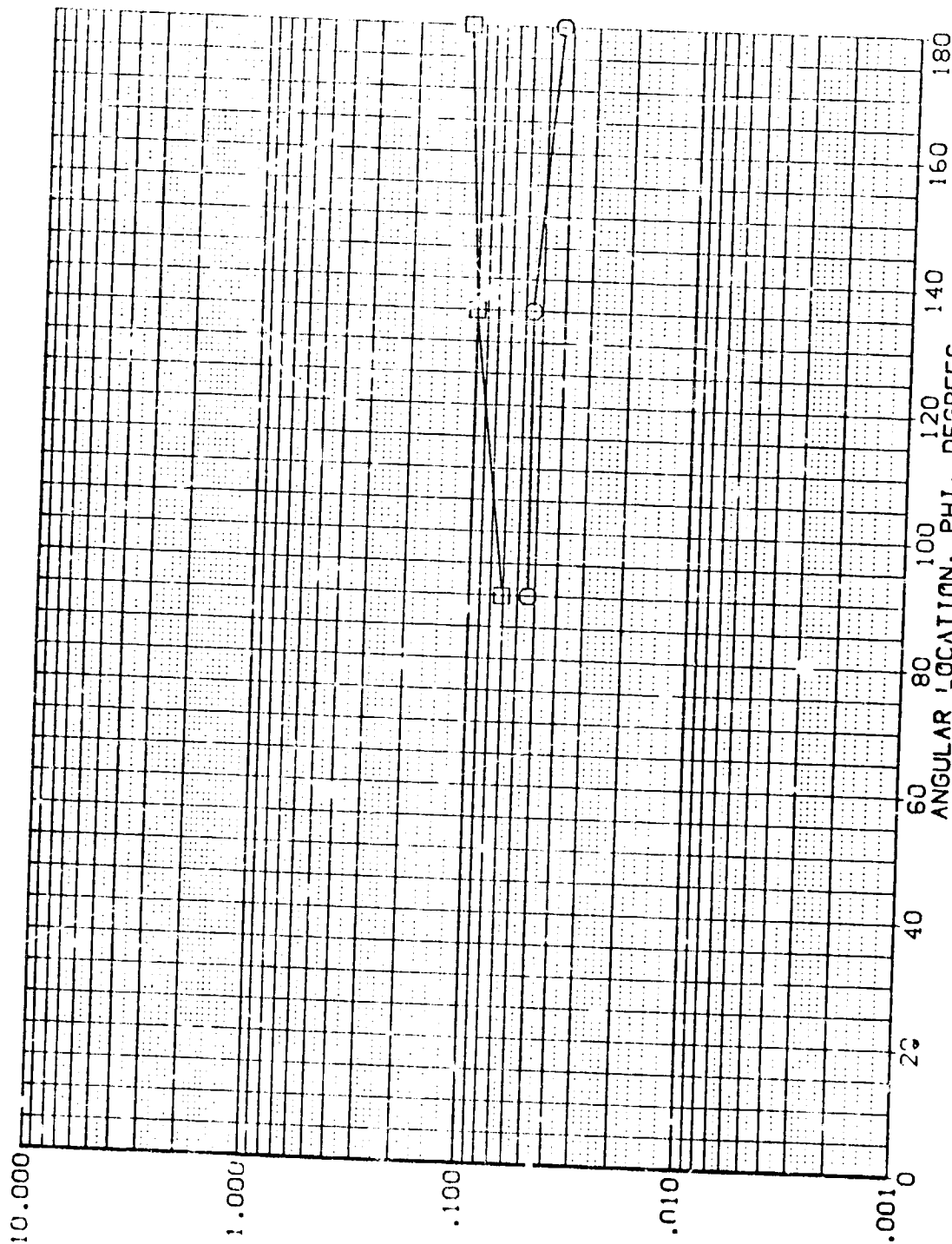


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .800

DATA SET SYMBOL
(R0M1:5)
(R0M1:5)

CONFIGURATION DESCRIPTION
IM:8 TB
IM:8 TB

EXTERNAL TANK
EXTERNAL TANK

DELTA ALPHA BACH
.000 .000
.000 -5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

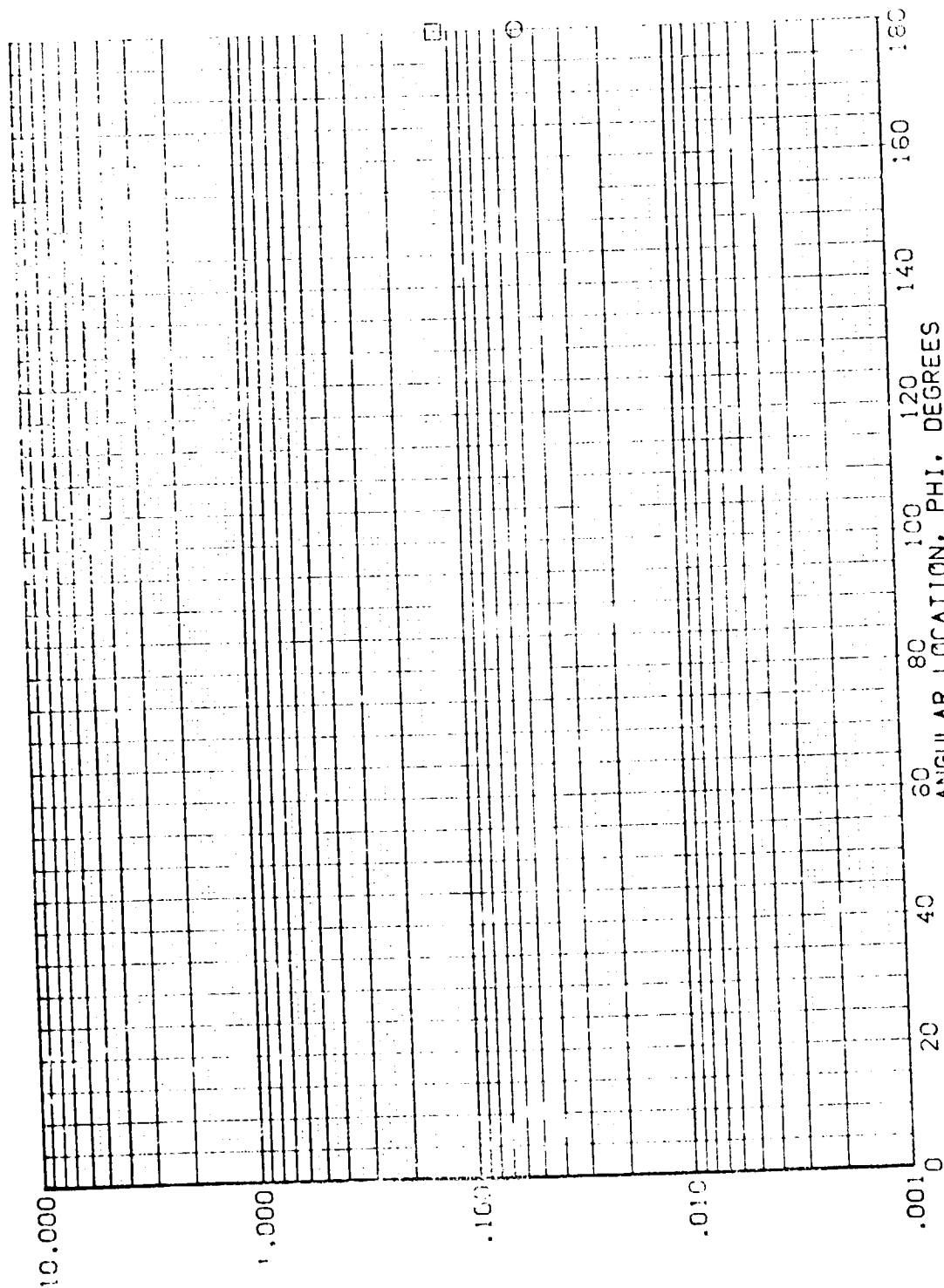


FIG 19 ET ALONE HEATING RATE VARIATION WITH PHI - NO TRIPS

RN/L = 4.569 HAW/HT = 1.000 X/L = .900

EXTERNAL TANK (RQMT13)

IH18 T8 X26

PARAMETRIC VALUES
ALPHA .000
BETA .000
MACH 6.000
X-HT .031

WAB/HT .850
RN/L 4.817

SYMBOL X/L
□ .000
◇ .010
◇ .020
◇ .060
◇ .100
◇ .150

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

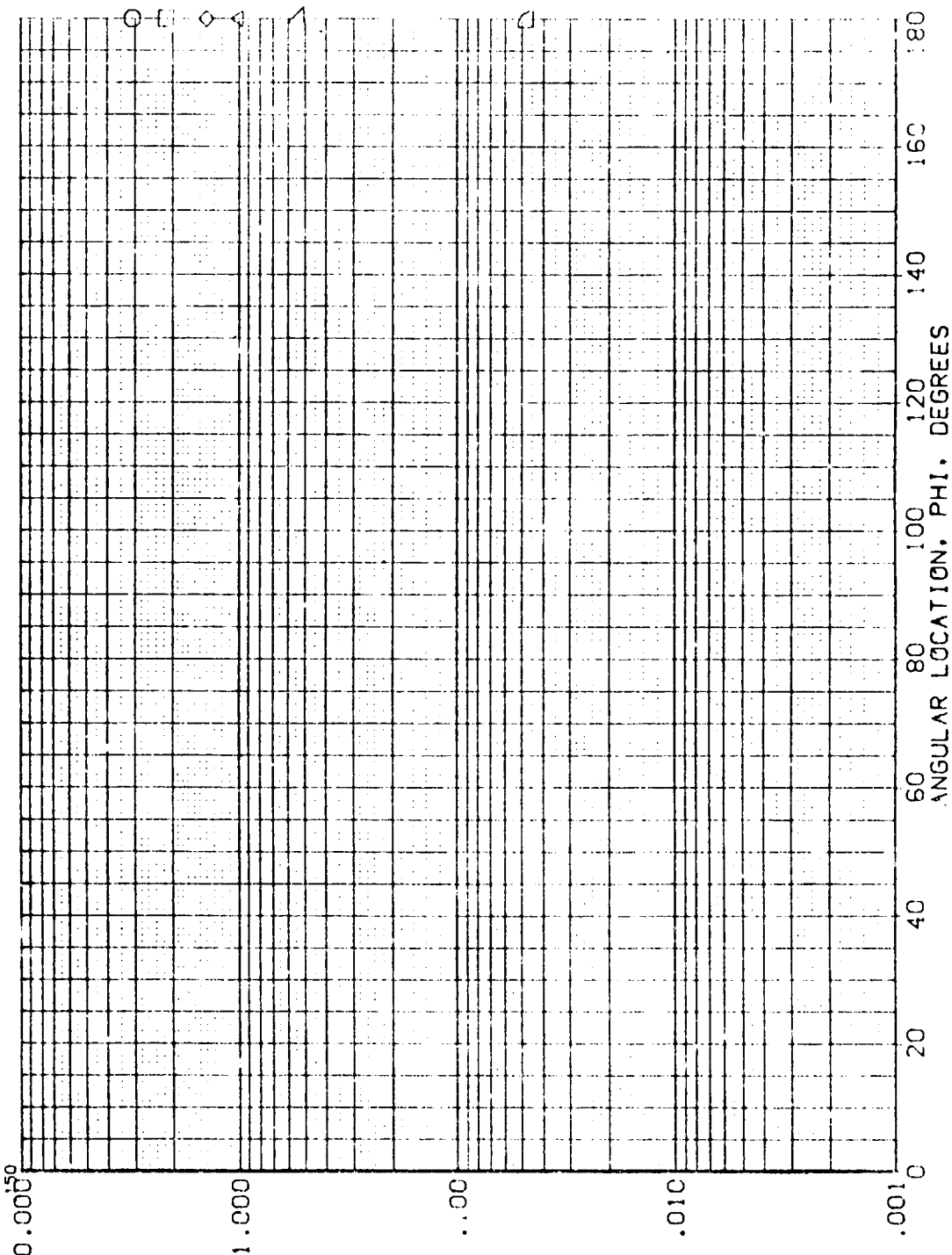


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

EXTERNAL TANK (RQMT13)

SYMBOL	X/L	HAW/HT	RN/L	PARAMETRIC VALUES
□	.200	.850	4.817	ALPHA .000 BETA .000
◇	.250			MACH 6.000 X-HT .031
◇	.300			
◇	.350			
◇	.375			
◇	.400			

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

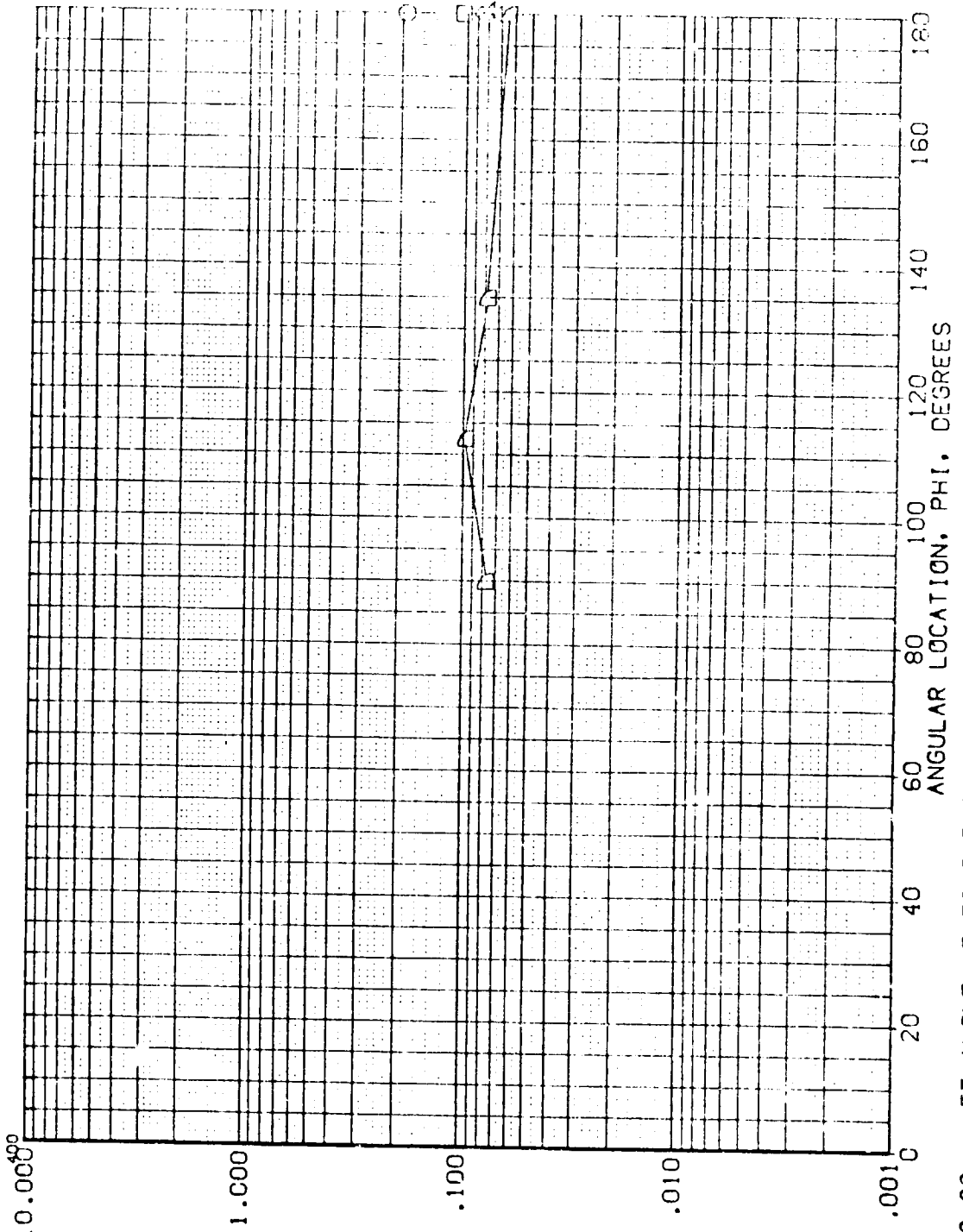


FIG 20 ET ALONE HEATING RATE VARIATION WITH Φ - SMALL TRIPS

1H18 T8 X26

EXTERNAL TANK (RQMT13)

SYMBOL

K/L

HAB/NT

RA/L

0.425
0.450
0.475
0.500
0.525
0.550

4.817

PARAMETRIC VALUES

ALPHA
MACH
0.000
6.000
0.074
0.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

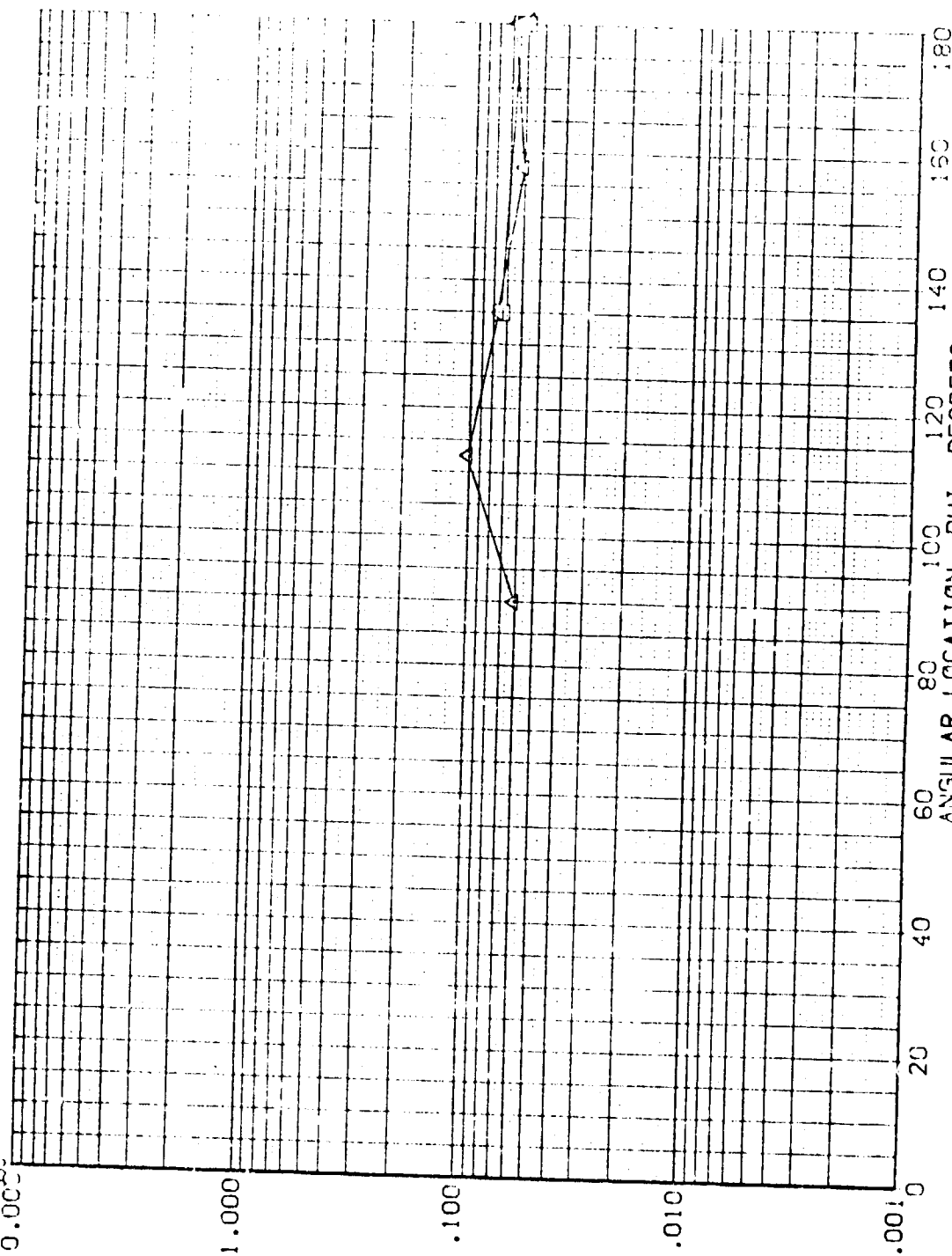


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

EXTERNAL TANK (RQMT: 3)

!H!8 T8 X26

PARAMETRIC VALUES	
6.000	BETA
.000	
.000	X-H ²

SYMBOL	X/L	HAW/HT	RN/L
00	.600	.850	4.817
01	.650		
02	.700		
03	.900		
04	.900		

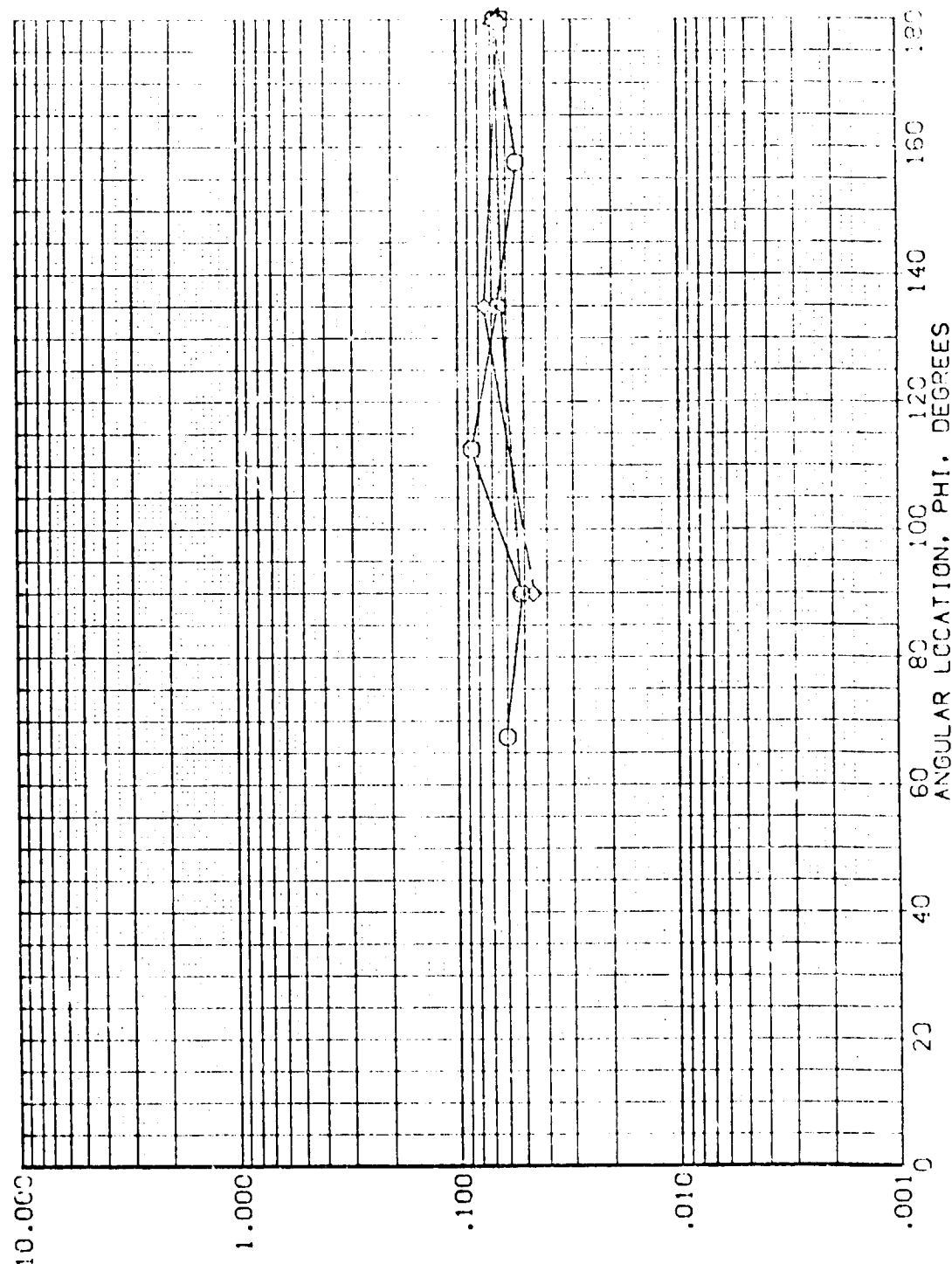
RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF} 

FIG 20
ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

FIG 13 18 X 26

EXTERNAL TANK (RCMT13)

SYMBOL X/L HAW/HT PN/L
 .000
 .010
 .020
 .060
 .100
 .150

PARAMETRIC VALUES
 ALPHA .000
 BETA 6.000
 MACH X=1

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

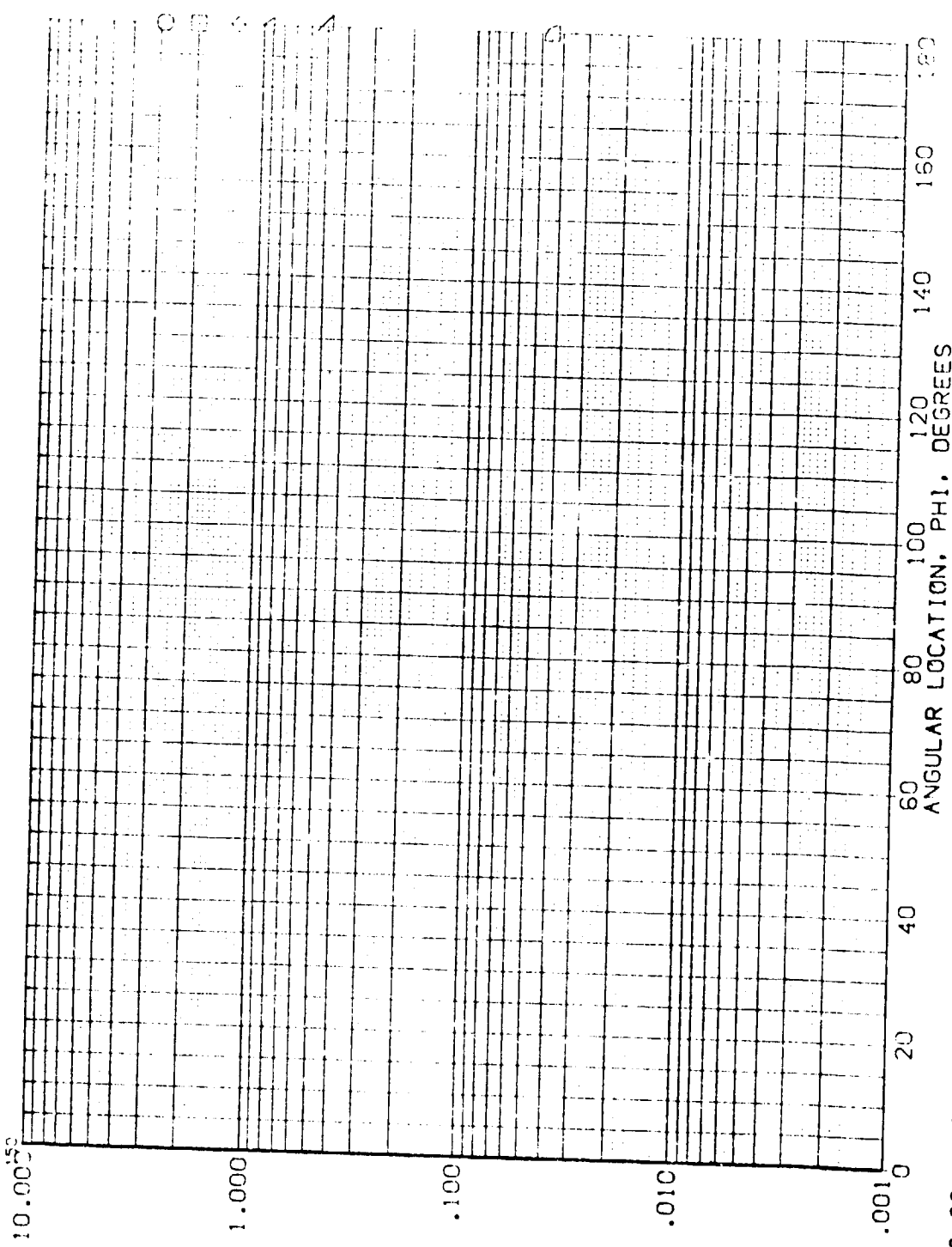


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 T8 X26

EXTERNAL TANK (RQMT13)

SYMBOL X/L HAM/HT RN/L
 □ .200
 ◇ .250
 ○ .300
 △ .350
 × .375

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA X-HY .000
 X-HY .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

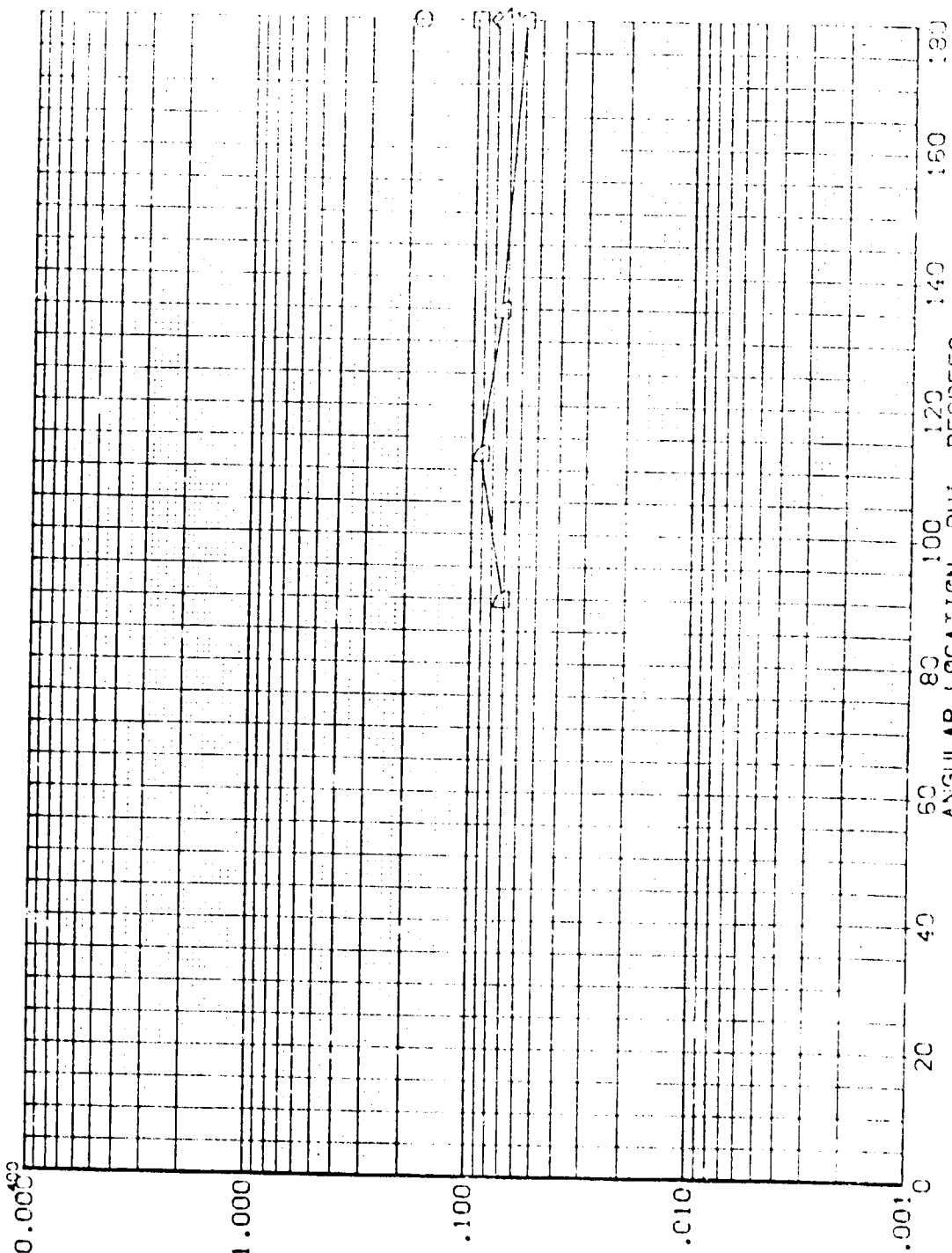


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

REPRODUCIBILITY OF THE
ORDER OF 11 11 FOUR

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

EXTERNAL TANK (RGMT13)

14-18 T8 X26

SYMBOL

X/L

HAW/HT

RN/L

.425

.450

.475

.500

.525

.550

.900

4.817

PARAMETRIC VALUES

.000

BETA

6.000

X-NT

ALPHA

MACH

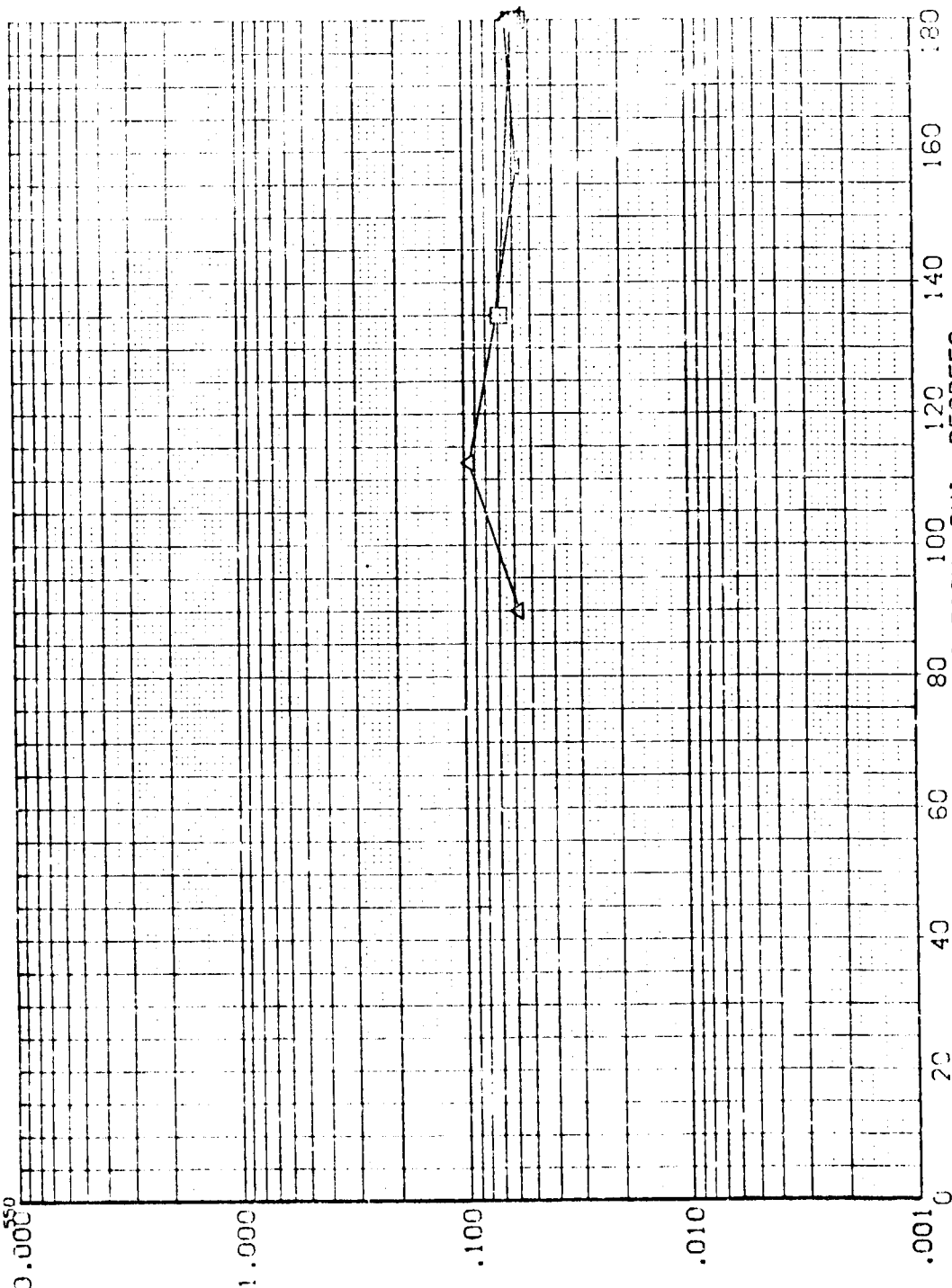


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

1H18 18 X26

EXTERNAL TANK (RCMT13)

SYMBOL X/L HMB/HT RN/L
 .600
 .650
 .700
 .800
 .900

PARAMETRIC VALUES
 ALPHA .000
 BETA 6.000
 X-RT .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

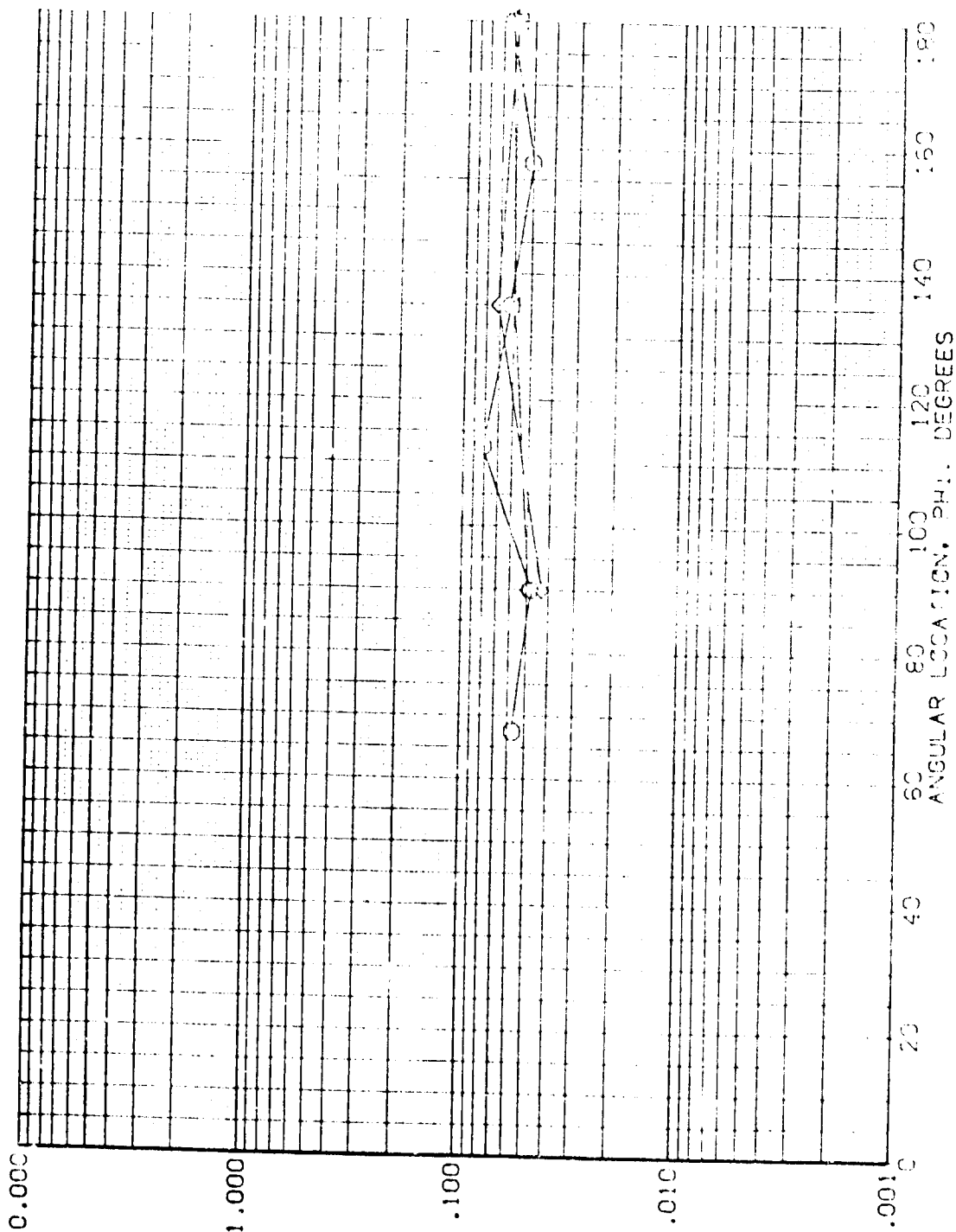


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

118 T8 X26

EXTERNAL TANK (RQMT:3)

SYMBOL

X/L

HAB/HT

RN/L

.000
.010
.020
.060
.120

4.817

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

PARAMETRIC VALUES

ALPHA

MACH

.000
6.000

95°A

X-REF

.000
.000

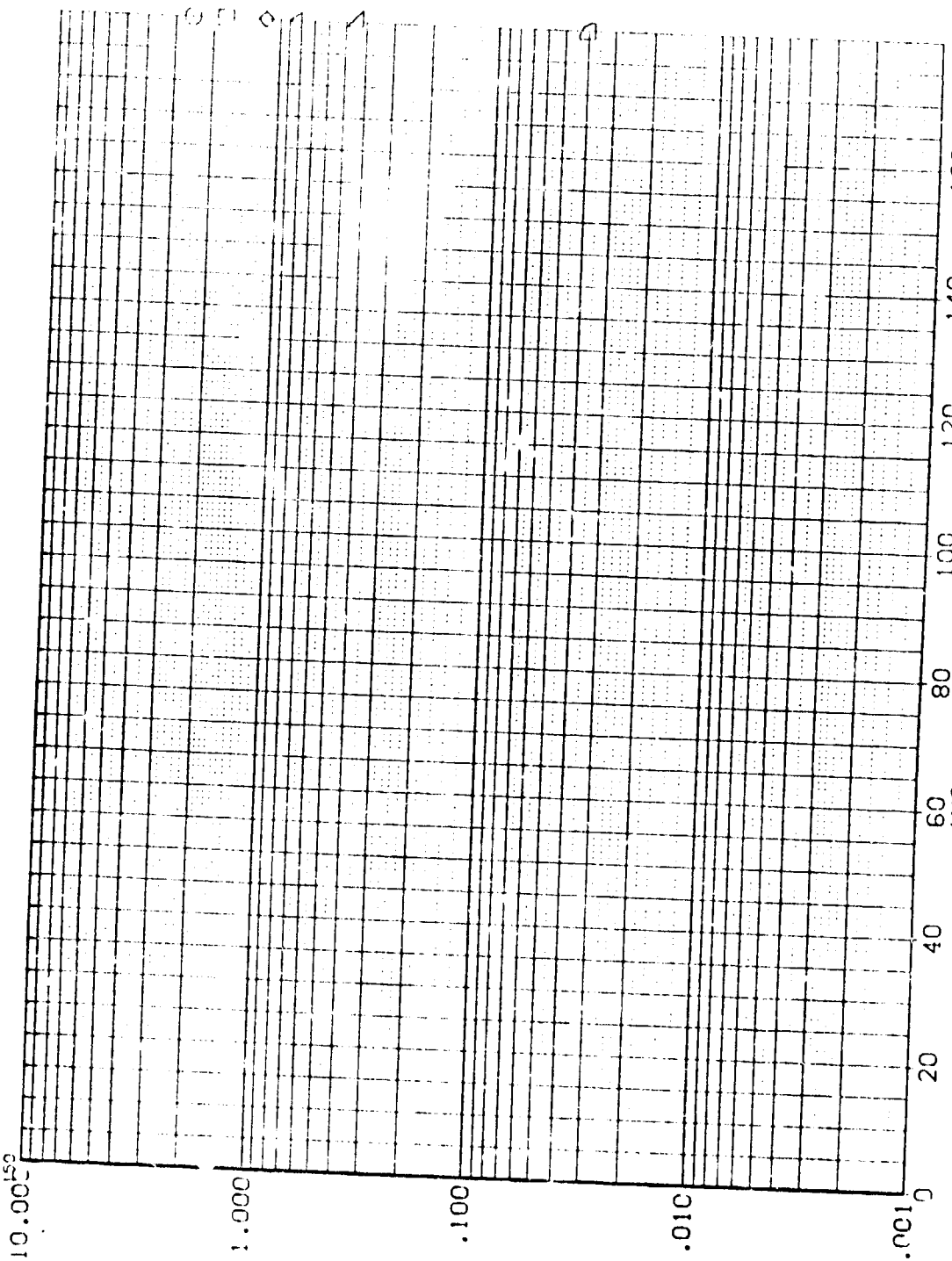


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

1H18 T8 X26

EXTERNAL TANK (RQMT13)

SYMBOL X/L HAW/HT RN/L
 .200 1.000 4.817
 .250
 .300
 .350
 .375
 10.000

PARAMETRIC VALUES
 ALPHA .000 BETA .000
 MACH 5.000 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

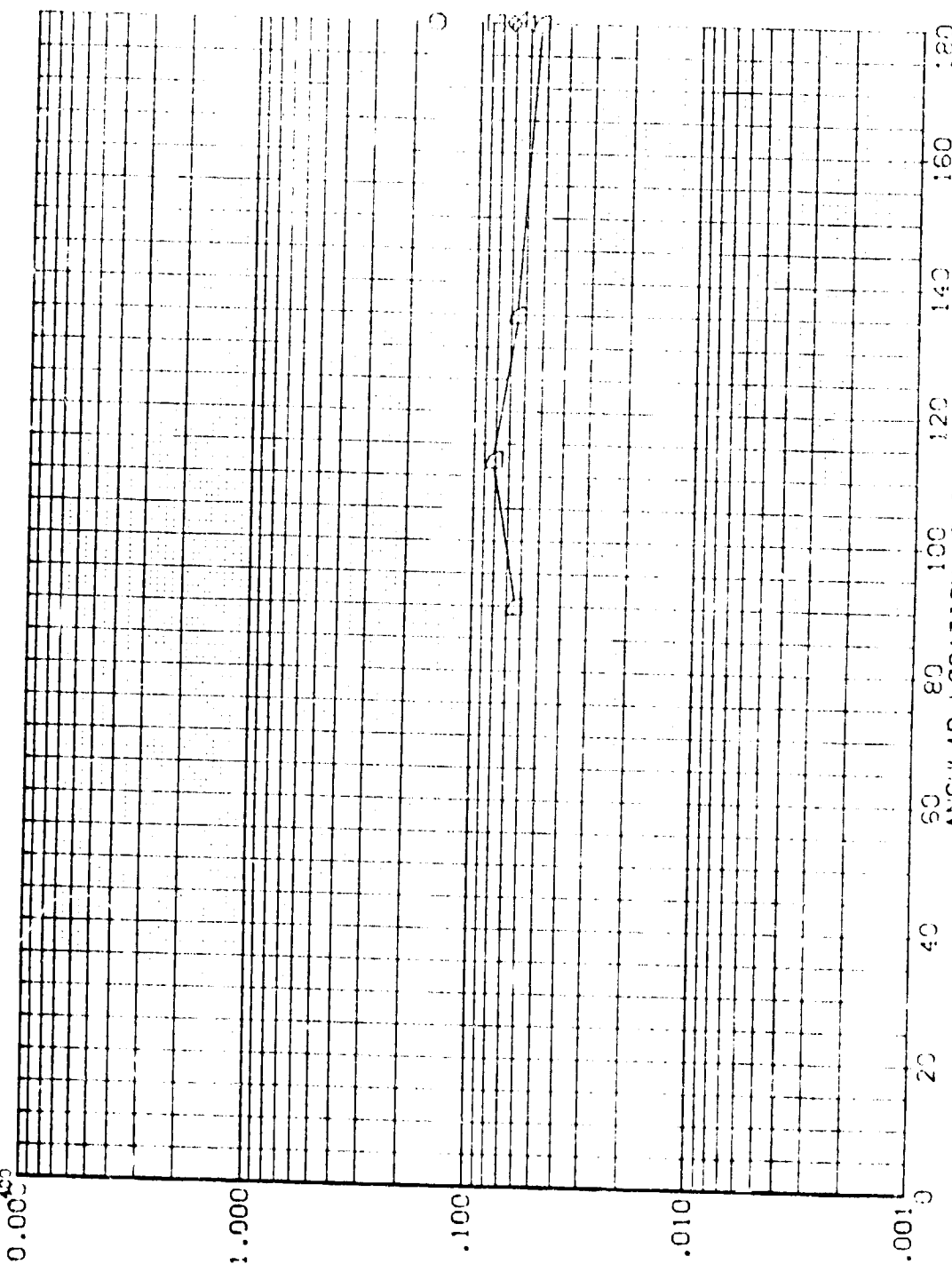


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 T8 X26

EXTERNAL TANK (RQMT13)

SYMBOL

K/L

MAW/HT

RN/L

.425
.450
.475
.500
.525

1.000

4.817

PARAMETRIC VALUES
ALPHA
MACH

.000
6.000

BETA
X-HT

.000
.001

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

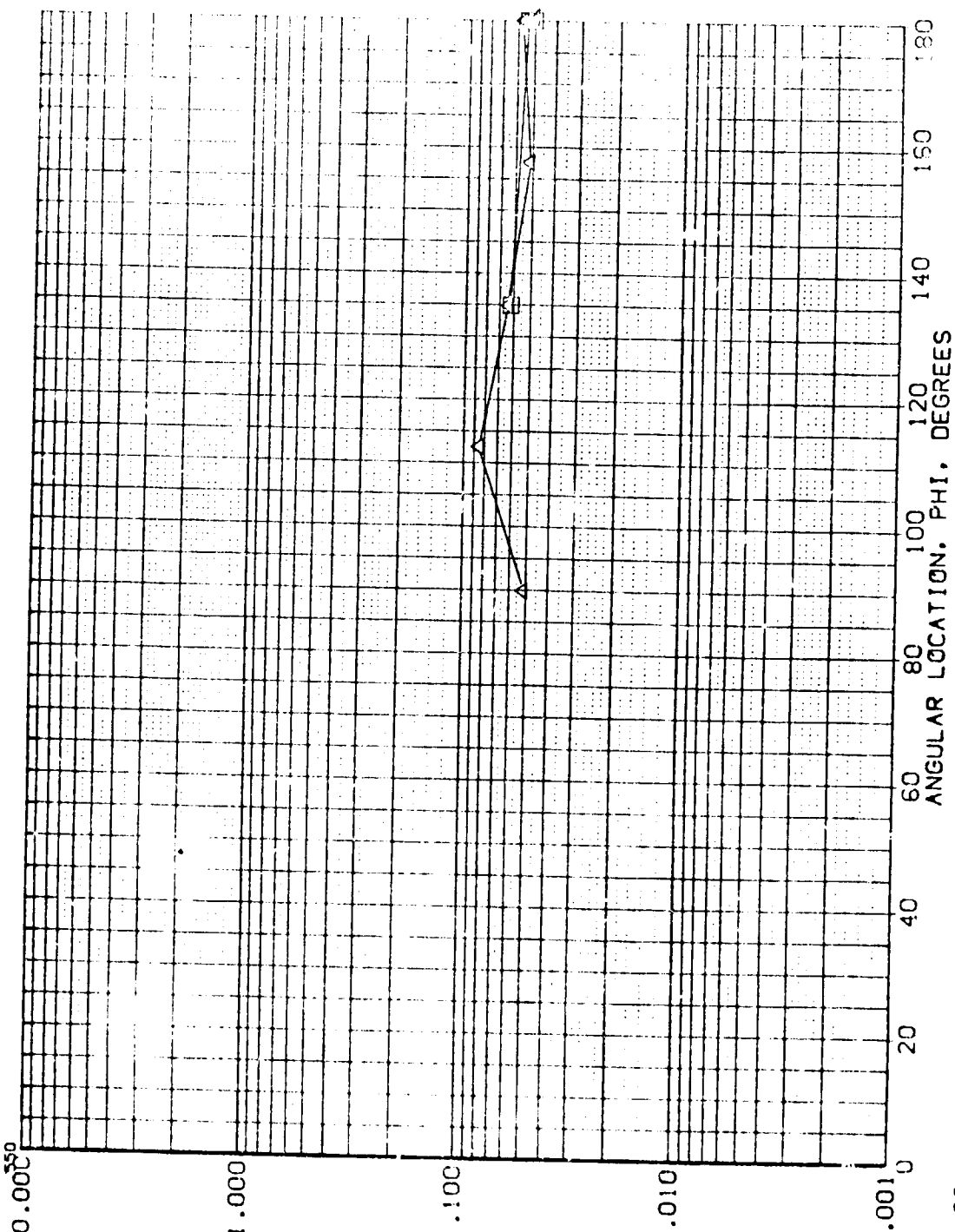


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

EXTERNAL TANK (RQMT13)

1H18 T8 X26

PARAMETRIC VALUES
ALPHA .000
BETA 6.000
K-HT .031

Y/HREF
X/L
HAW/HT
RN/L
4.817

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

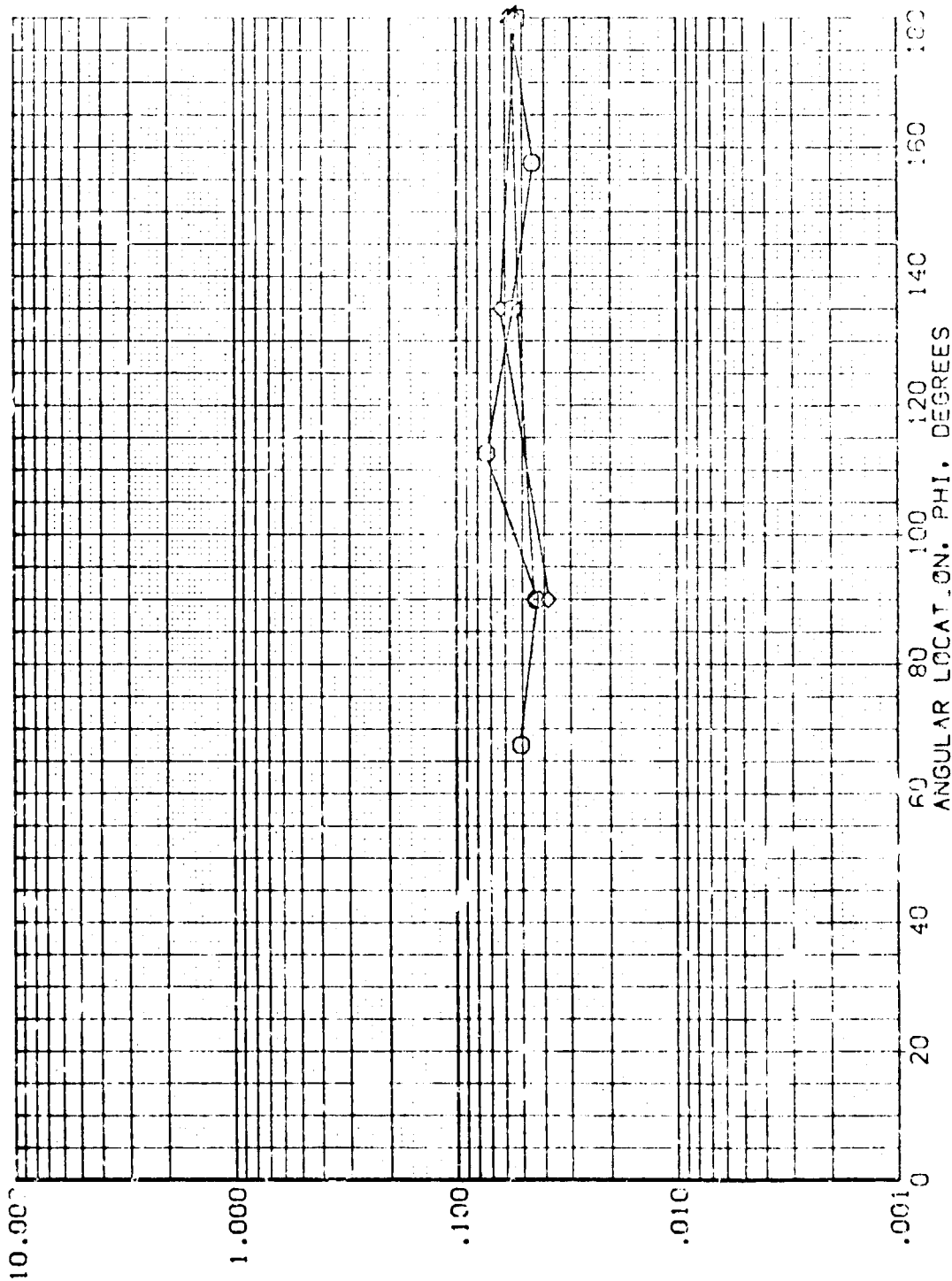


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

1H18 18 X26

EXTERNAL TANK (RCWT14)

SYMBOL X/L

HAW/HT RN/L 4.717

PARAMETRIC VALUES
ALPHA MACH
BETA X-H*

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

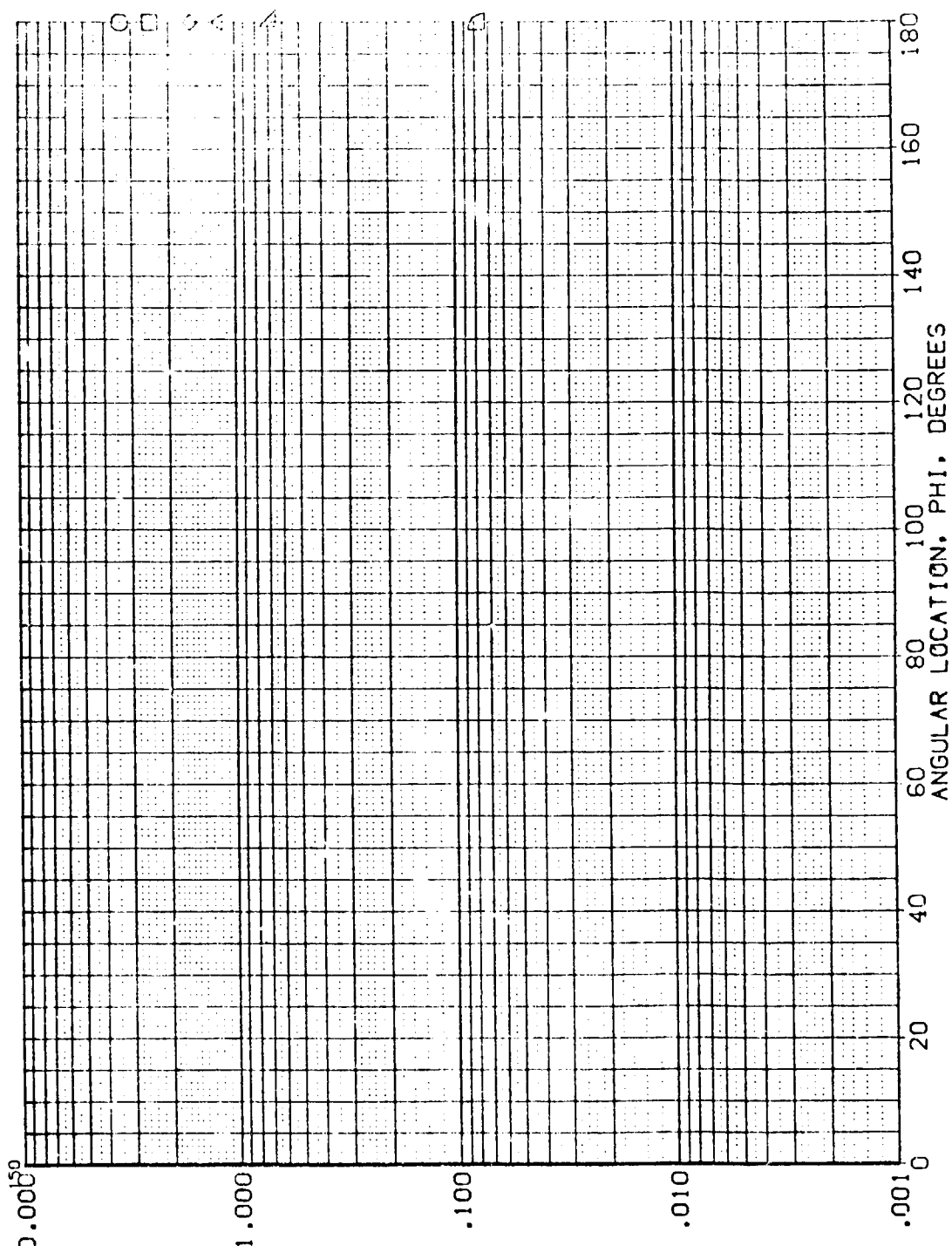


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

EXTERNAL TANK (RGMT14)

IH18 T8 X26

PARAMETRIC VALUES
ALPHA -5.000
MACH 6.000
BETA .000
X-HT .031

SYMBOL X/L HAW/HT RN/L
□ .200
◇ .250
◇ .300
◇ .350
◇ .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

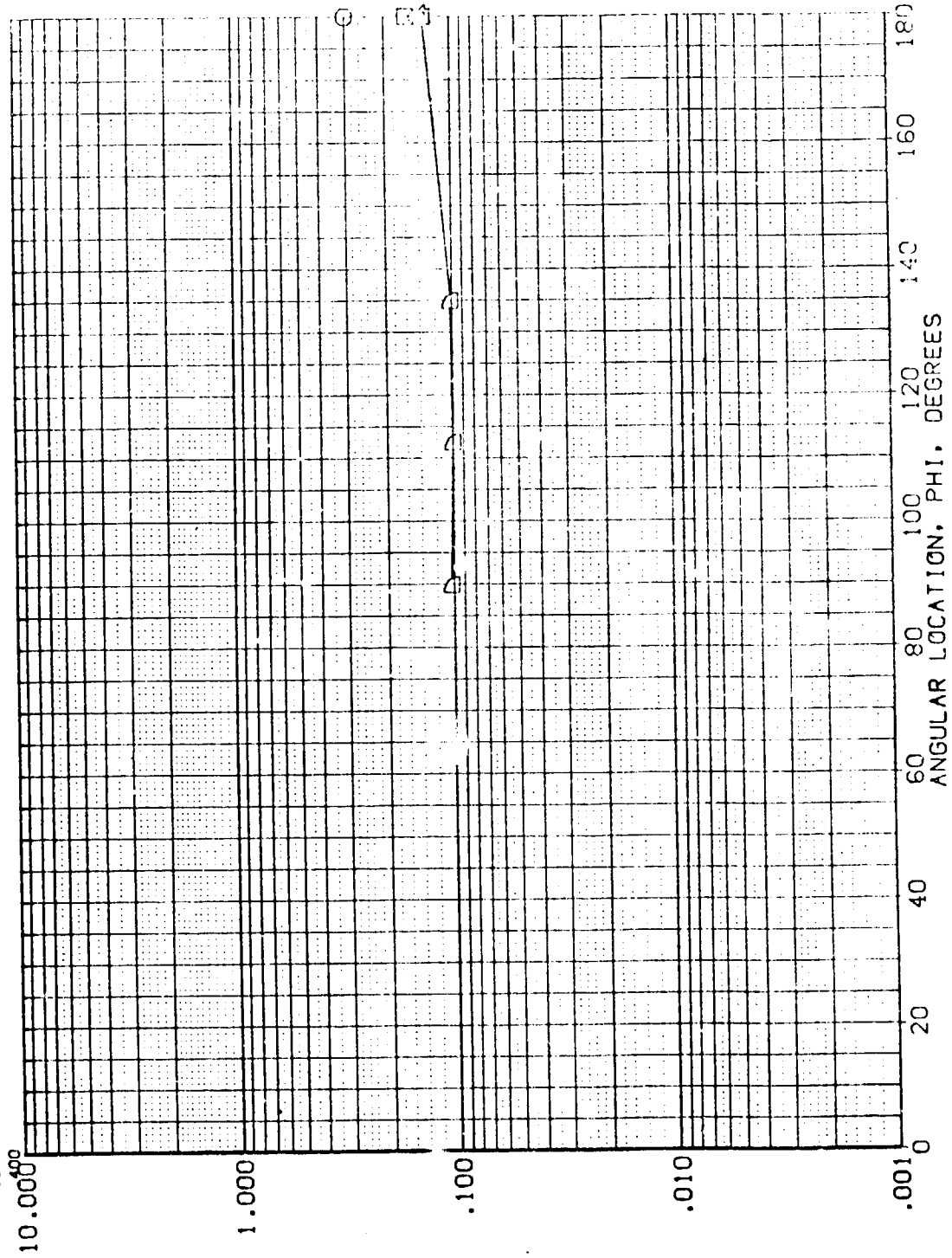


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

IH18 T8 X26

EXTERNAL TANK (RCM14)

SYMBOL X/L HAW/HT RN/L
 □ .425
 ◇ .450
 △ .475
 ○ .500
 ○ .525
 ○ .550

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA 1.000
 X-INT 1.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

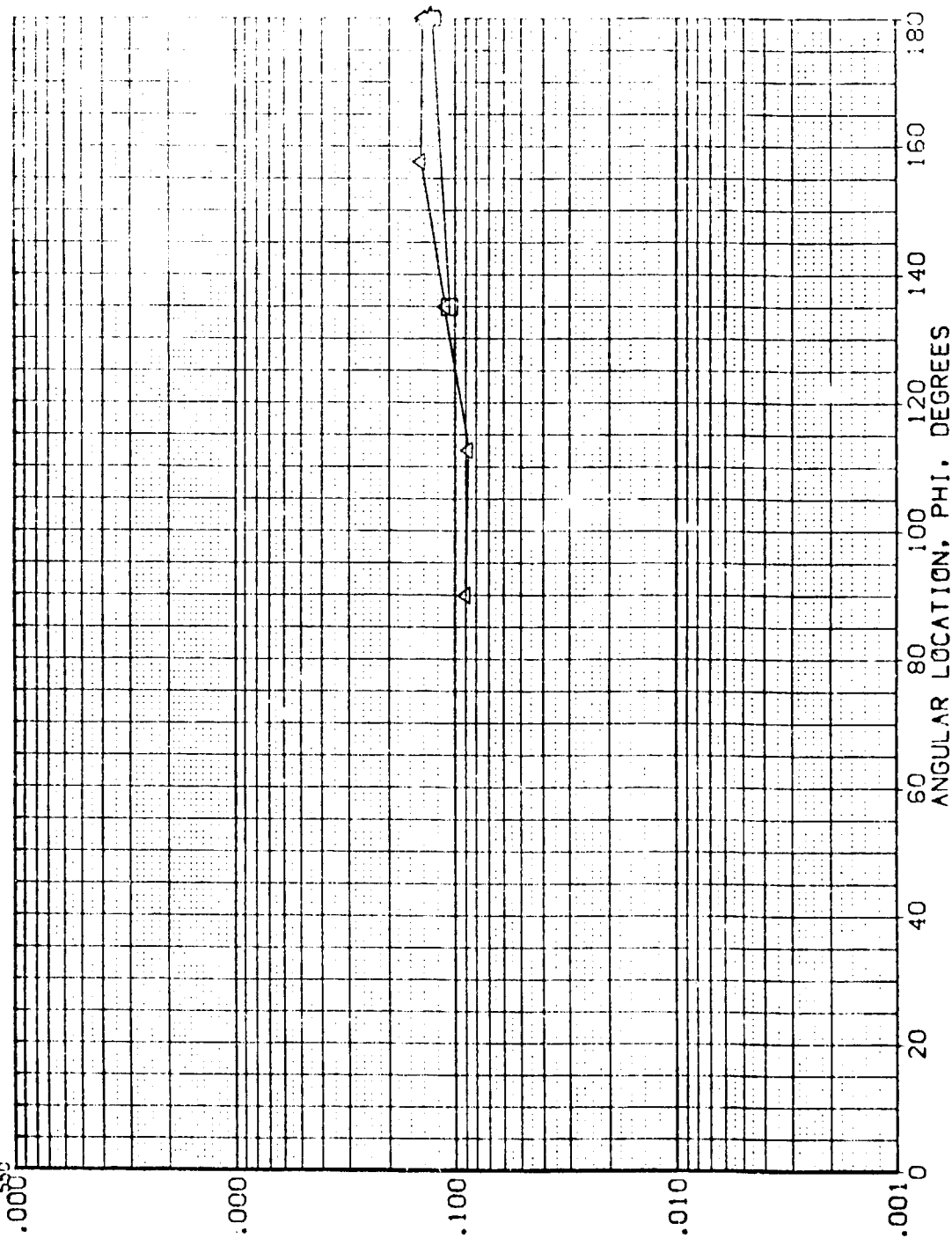


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

EXTERNAL TANK (RQMT14)

IH18 T8 X26		PARAMETRIC VALUES	
SYMBOL	X/L	ALPHA	BETA
▽	.600	MACH	X-HY
◇	.650		
□	.700		
◇	.800		
□	.900		

HAU/HT .850 RN/L 4.717

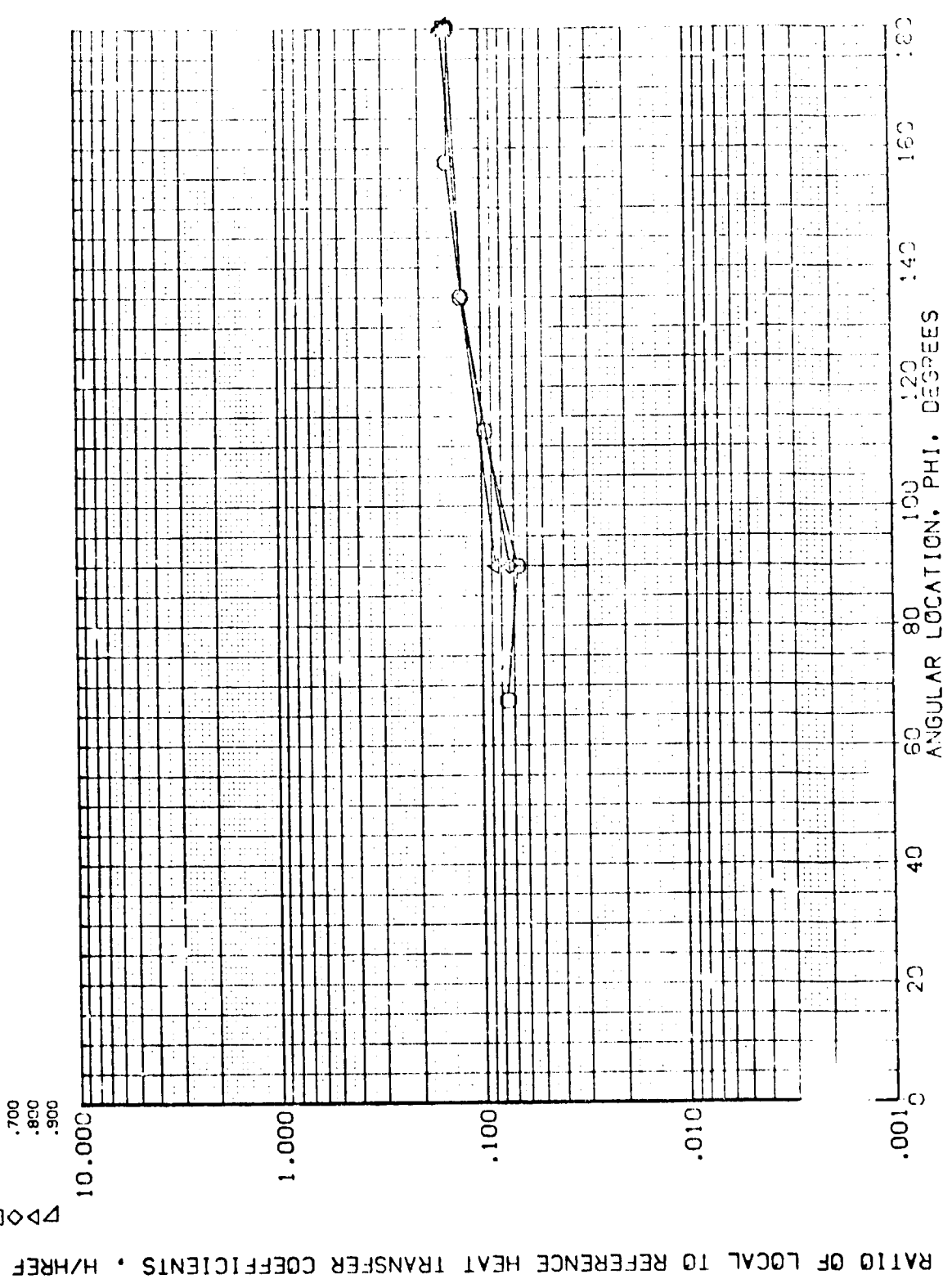


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

IH18 T8 X26

EXTERNAL TANK (RQMT14)

SYMBOL

K/L

HAW/HT

RN/L

0.000
0.010
0.020
0.060
0.100

4.717

PARAMETRIC VALUES

ALPHA
MACH

-5.000
6.000

BETA
X-REF

1.000
1.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

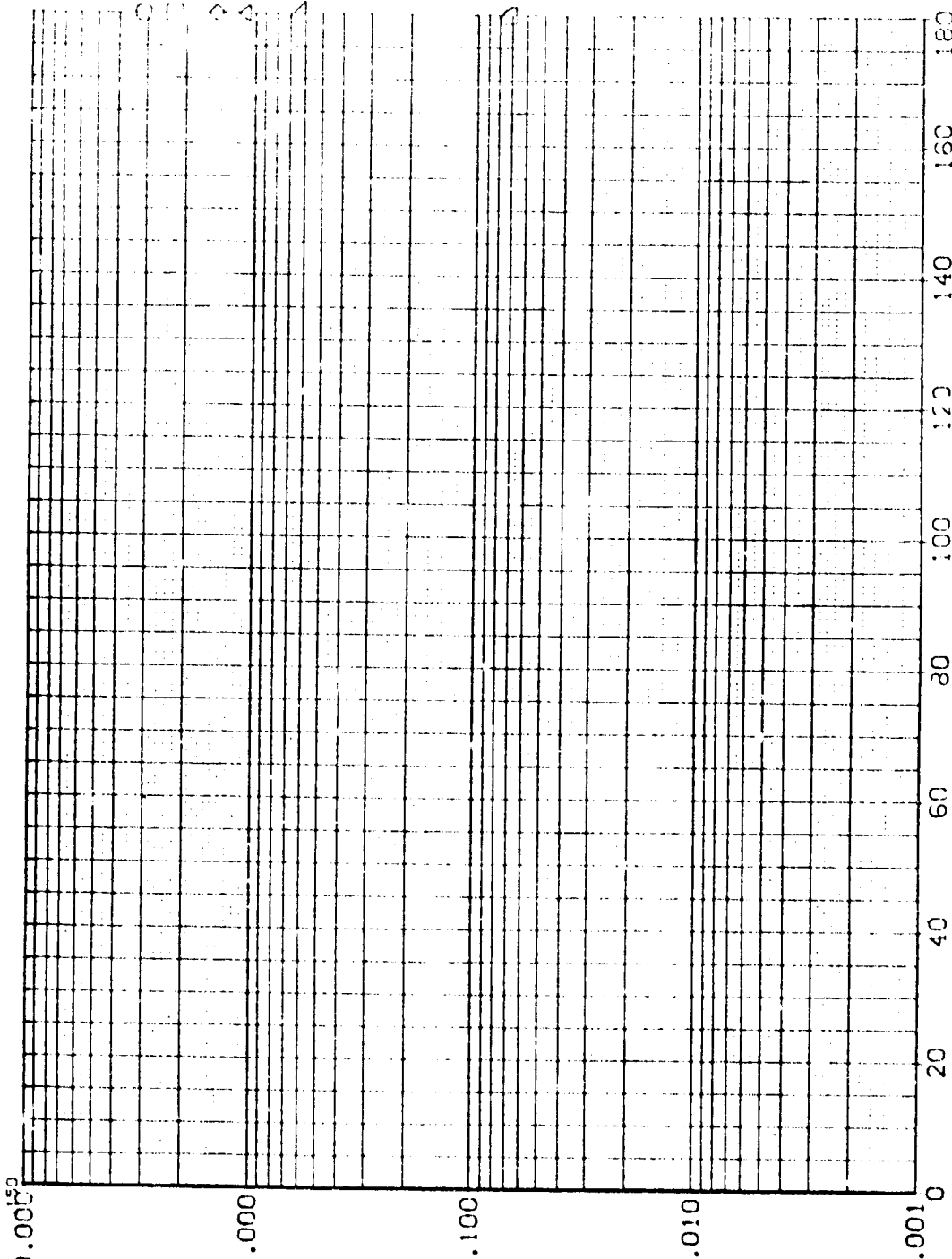
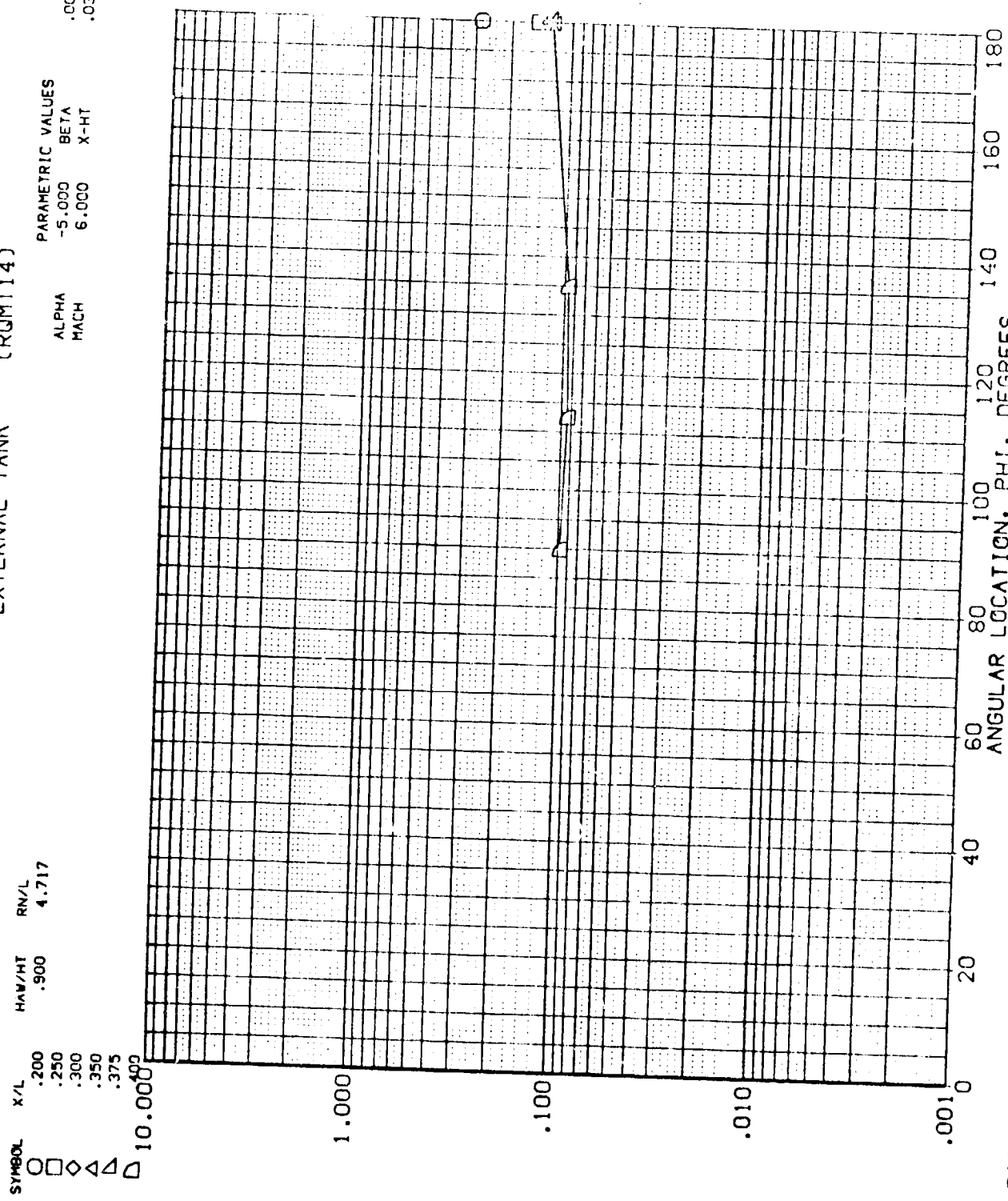


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 T8 X26
 EXTERNAL TANK (RQMT14)
 PARAMETRIC VALUES
 ALPHA MACH
 -5.000
 BETA
 6.000
 X-HT
 .031
 .000



RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}
 SYMBOL X/L HAW/HT RN/L 4.717
 .200
 .250
 .300
 .350
 .375

FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS
 ANGULAR LOCATION, PHI, DEGREES

1H18 T8 X26

EXTERNAL TANK (RQMT:4)

SYMBOL

X/L

HAW/HT

RN/L

.425

.900

4.717

.450

.475

.500

.525

PARAMETRIC VALUES
ALPHA
MACH
-5.000
5.000
BETA
X-HT
.000
.031

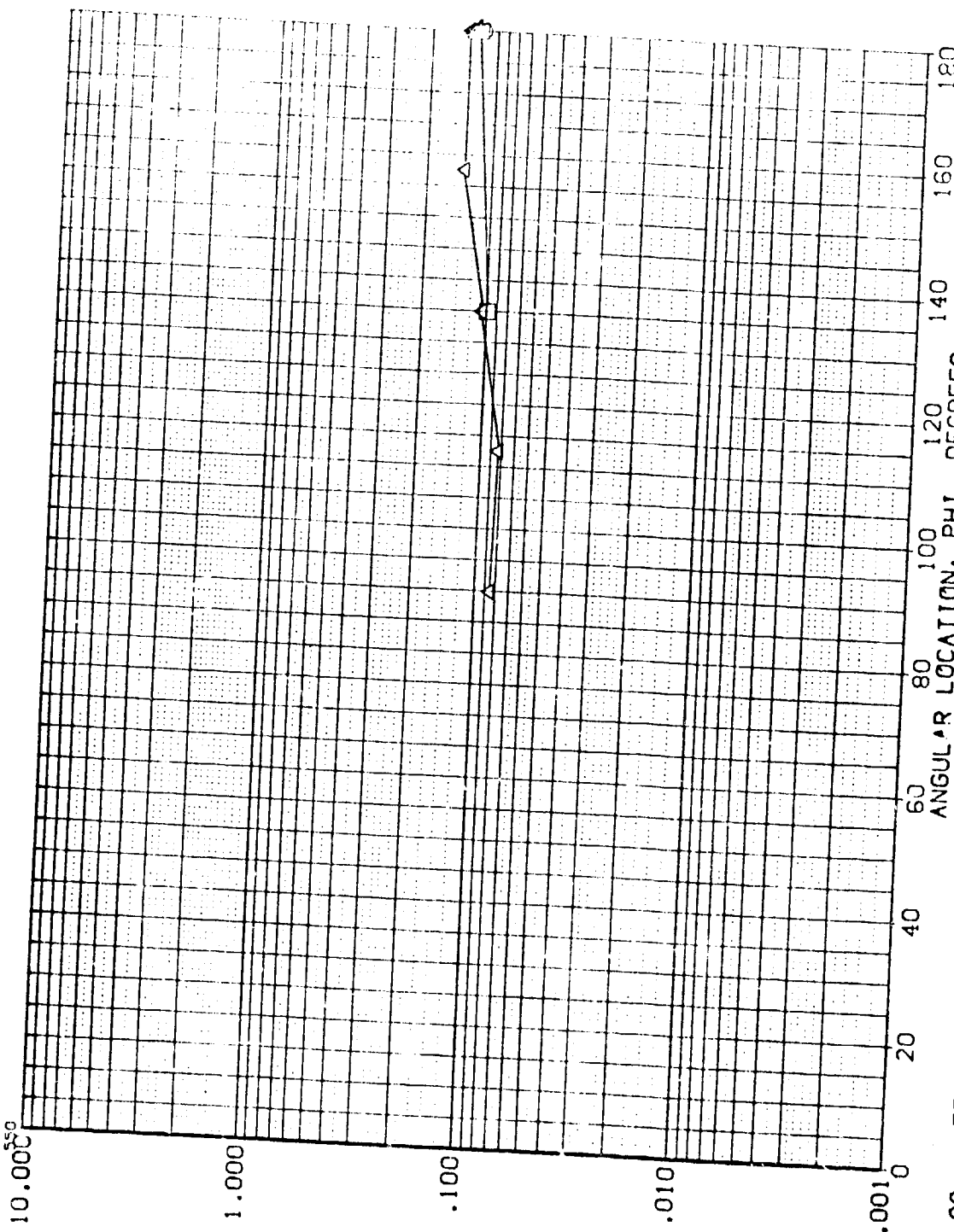


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 T8 X26
 EXTERNAL TANK (RQMT14)
 PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 X-HT .031

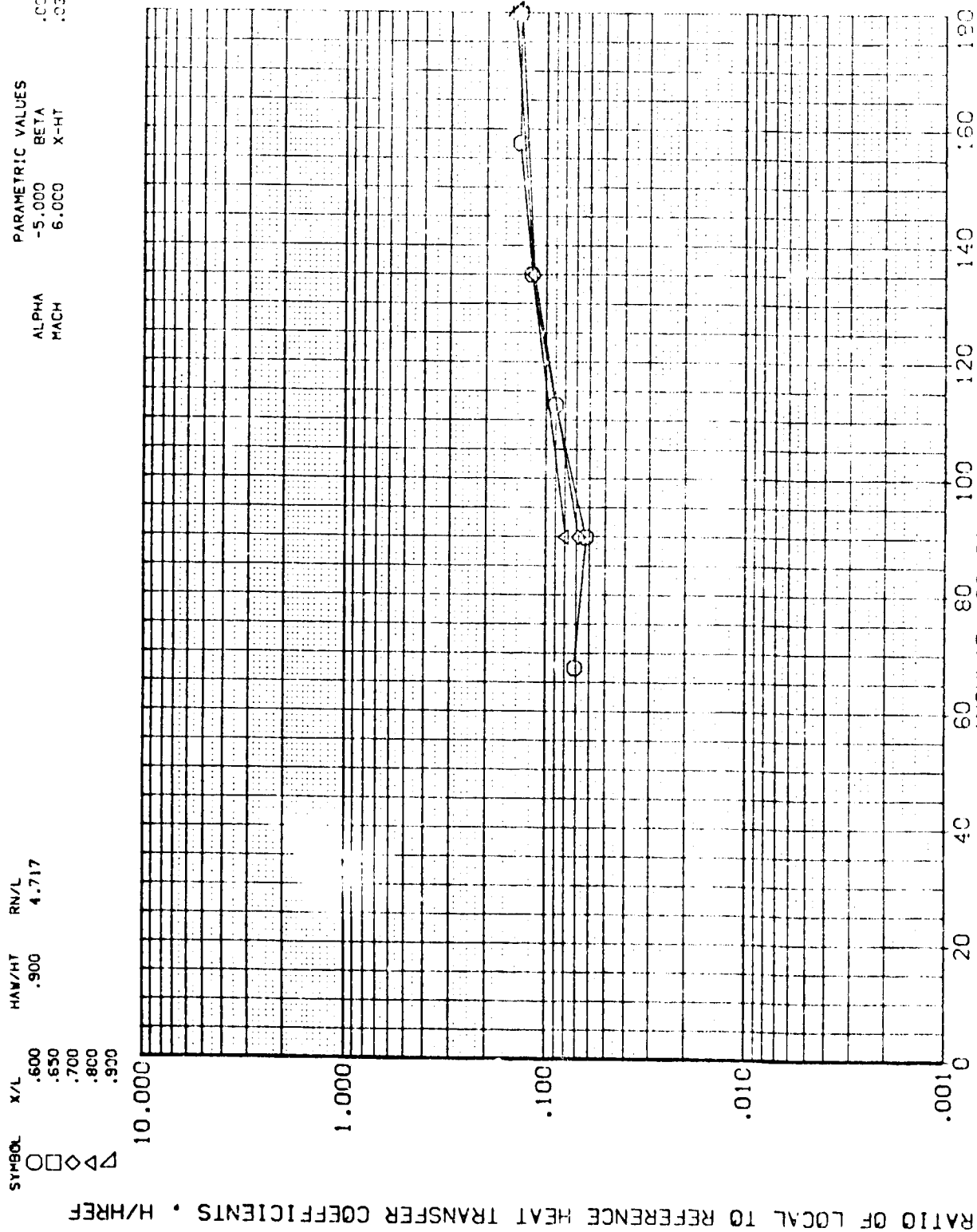


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

EXTERNAL TANK (RGMT14)

1418 T8 X26

MAW/MT 1.000
RN/L 4.717

PARAMETRIC VALUES
ALPHA -5.000
BETA 6.000
MACH X-HF

SYMBOL X/L
□ .000
◇ .010
◇ .020
◇ .060
◇ .100

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

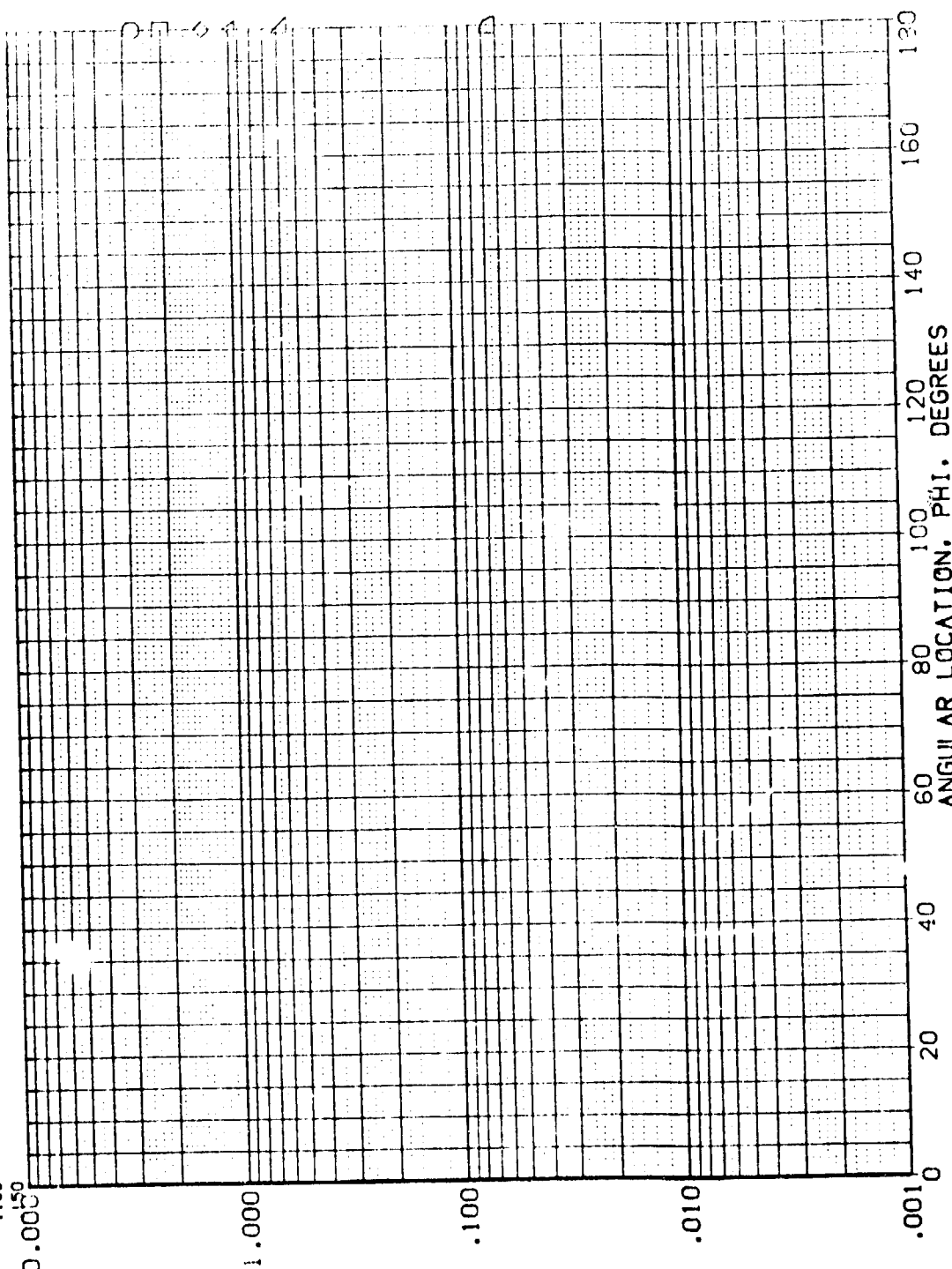


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 T8 X26

EXTERNAL TANK (RQMT14)

SYMBOL X/L
 □ .200
 ◇ .250
 △ .300
 ▽ .350
 ▴ .375
 ○ .400

HAB/HT 1.000
 RN/L 4.717

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA .000
 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

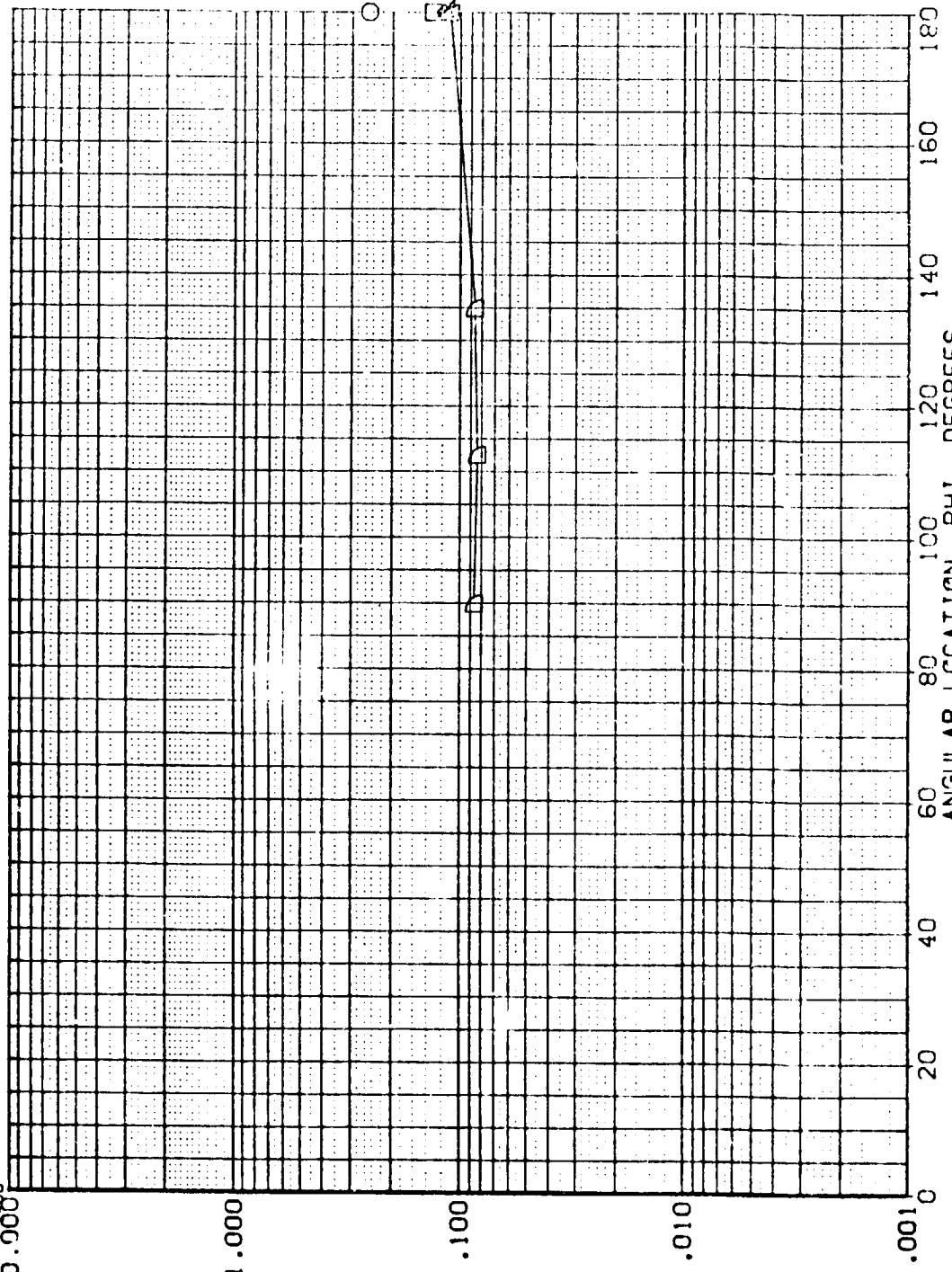


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

IH18 18 X26

EXTERNAL TANK (RQMT14)

PARAMETRIC VALUES
ALPHA -5.000 BETA 1000
MACH 6.000 X-HT 1000

SYMBOL X/L HAM/HT RN/L
□ .425 1.000 4.717
◇ .450
◇ .475
◇ .500
◇ .525

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

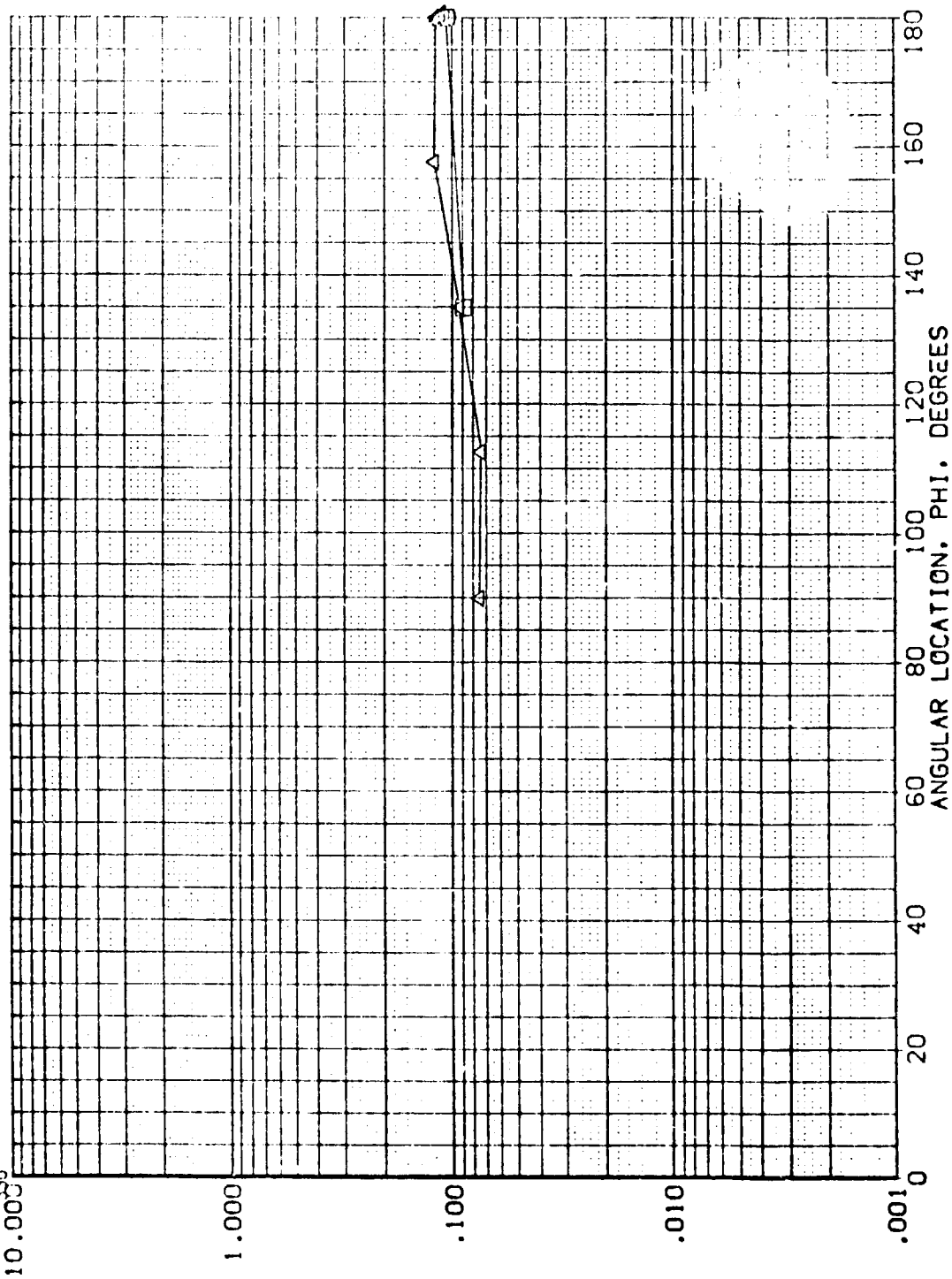


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

IH18 T8 X26
 EXTERNAL TANK (RQMT14)
 PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 X-HT .031

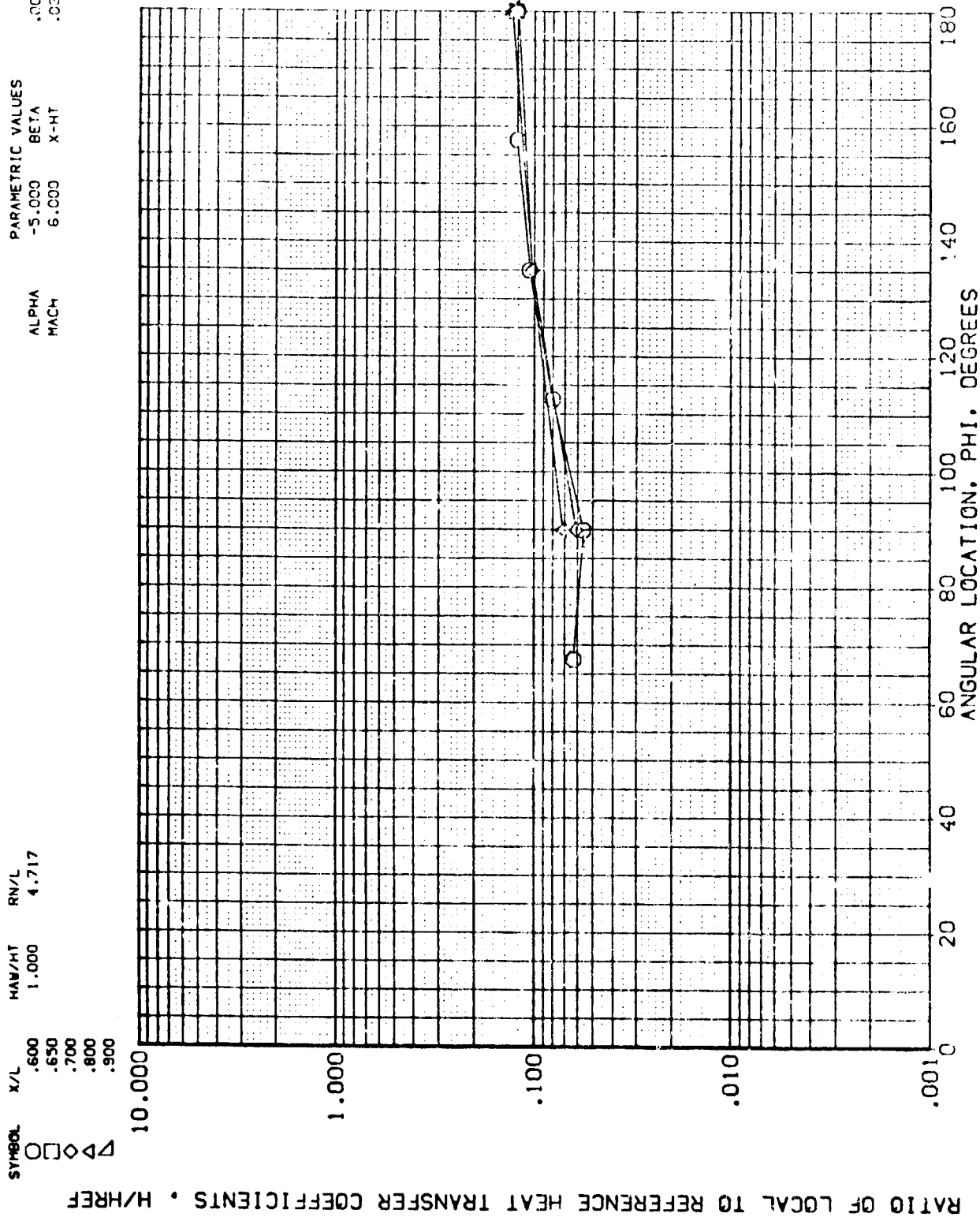


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RCHT13)
(RCHT14)

IM18 TB X26
IM18 TB X26

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

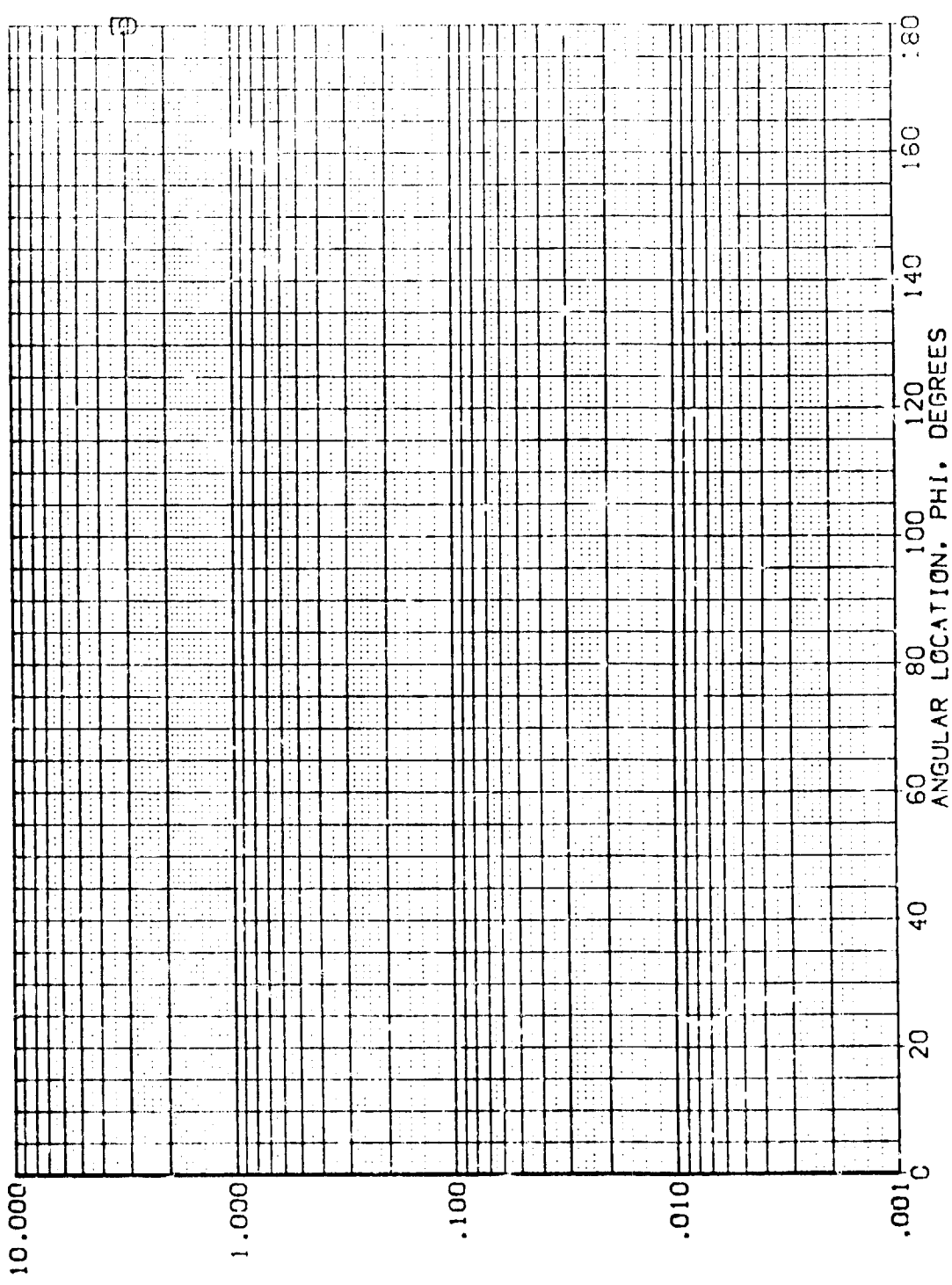


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .000

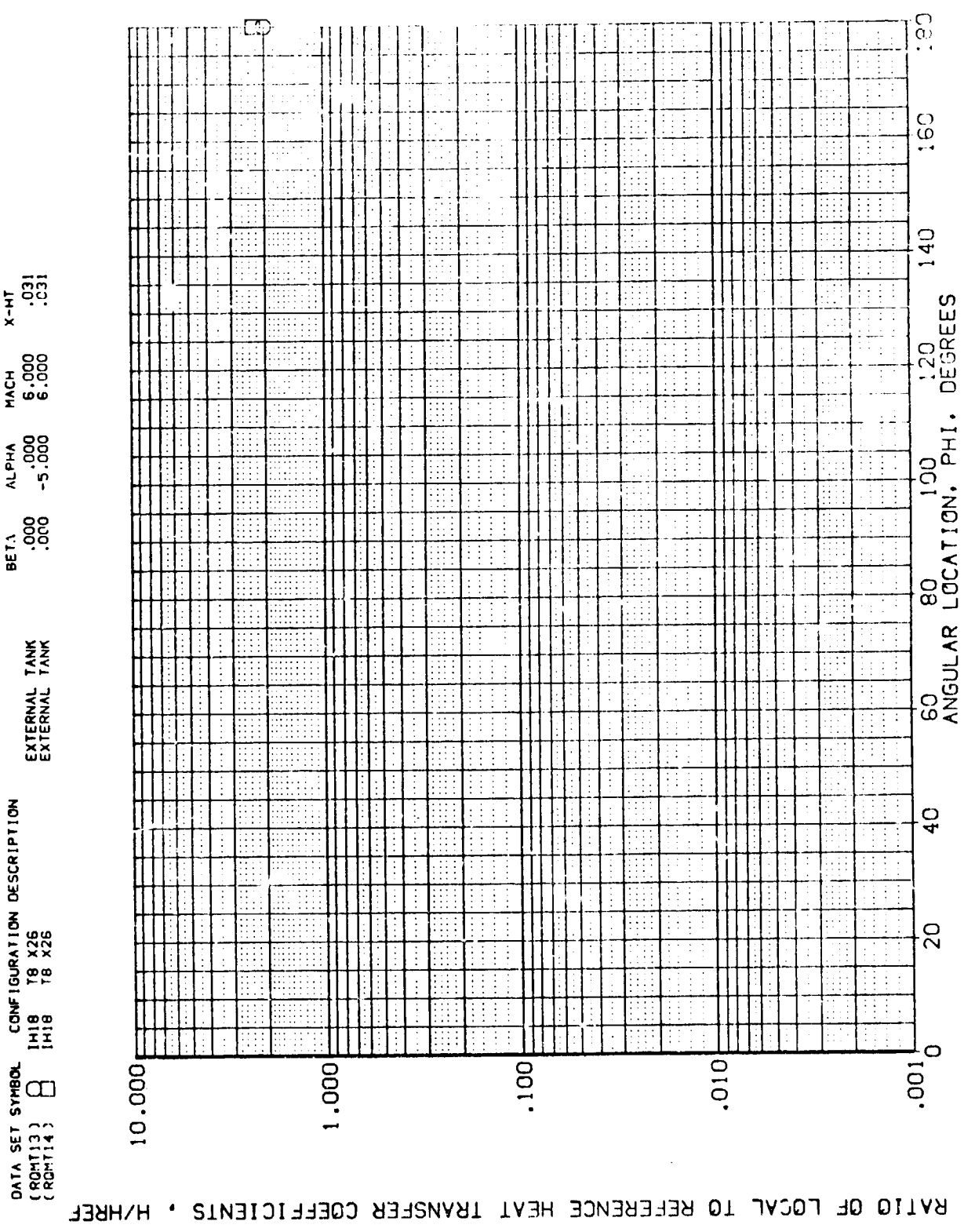


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .010

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL
(RMT13)
(RMT14)

CONFIGURATION DESCRIPTION
IH18 T8 X26
IH18 T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HT .031
.031

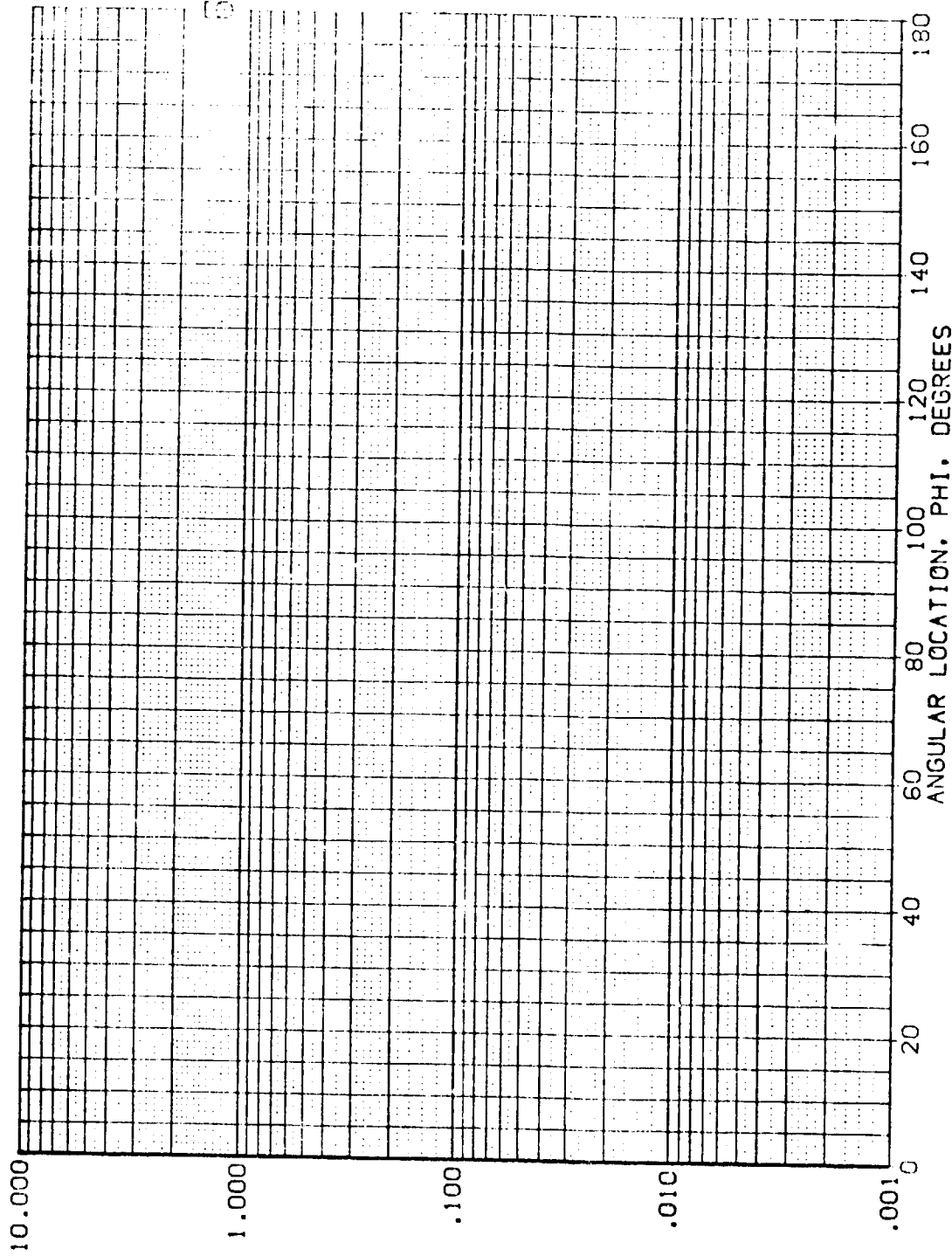


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .020

DATA SET SYMBOL (RQMT13) (RQMT14)

EXTERNAL TANK
EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000
X-HY .031 .031

CONF

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

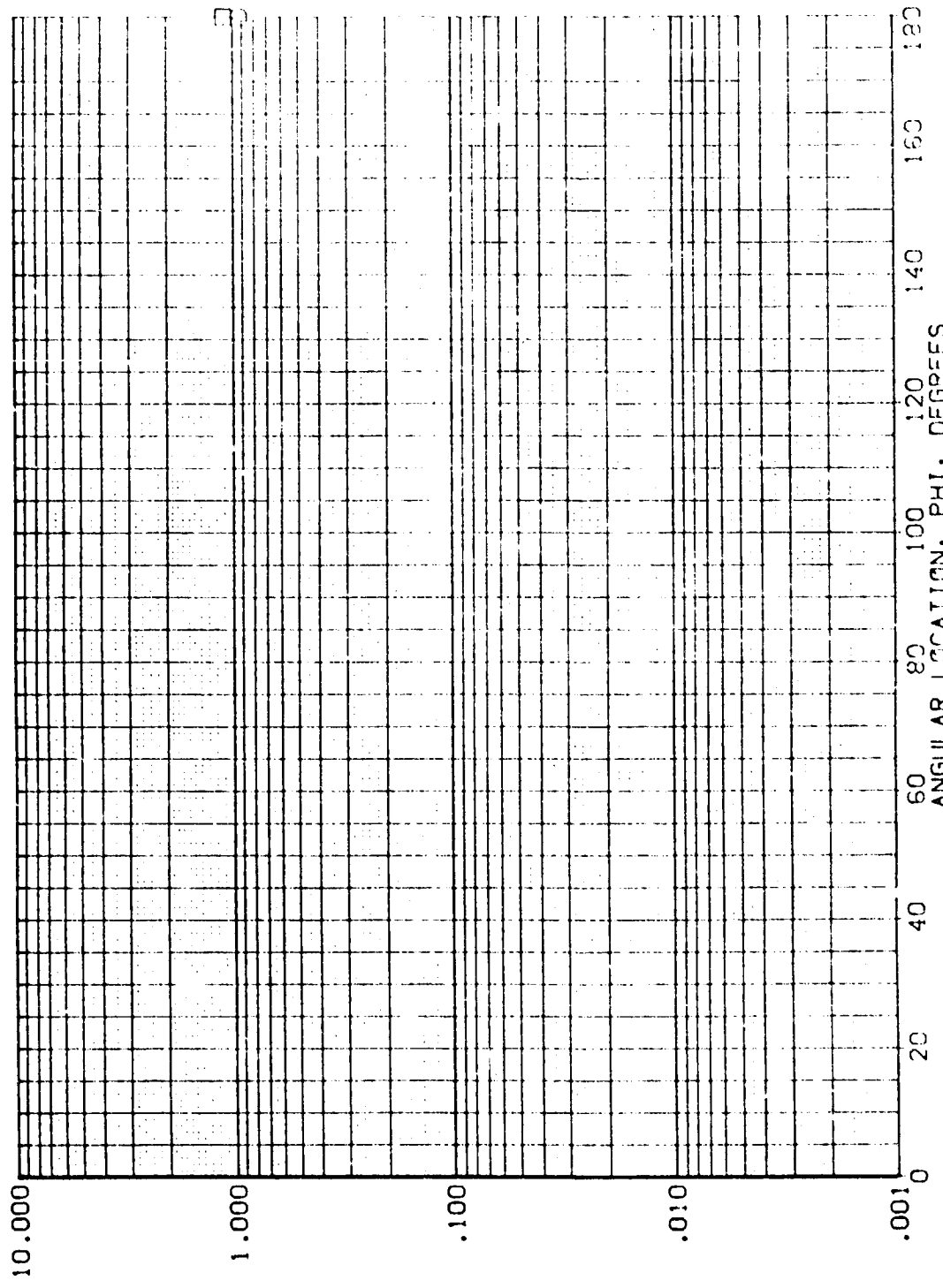


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) 1-18 TB X26
 (RMT14) 1-19 TB X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 .000
 ALPHA .000
 -5.000
 MACH 6.000
 6.000
 X-HT .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

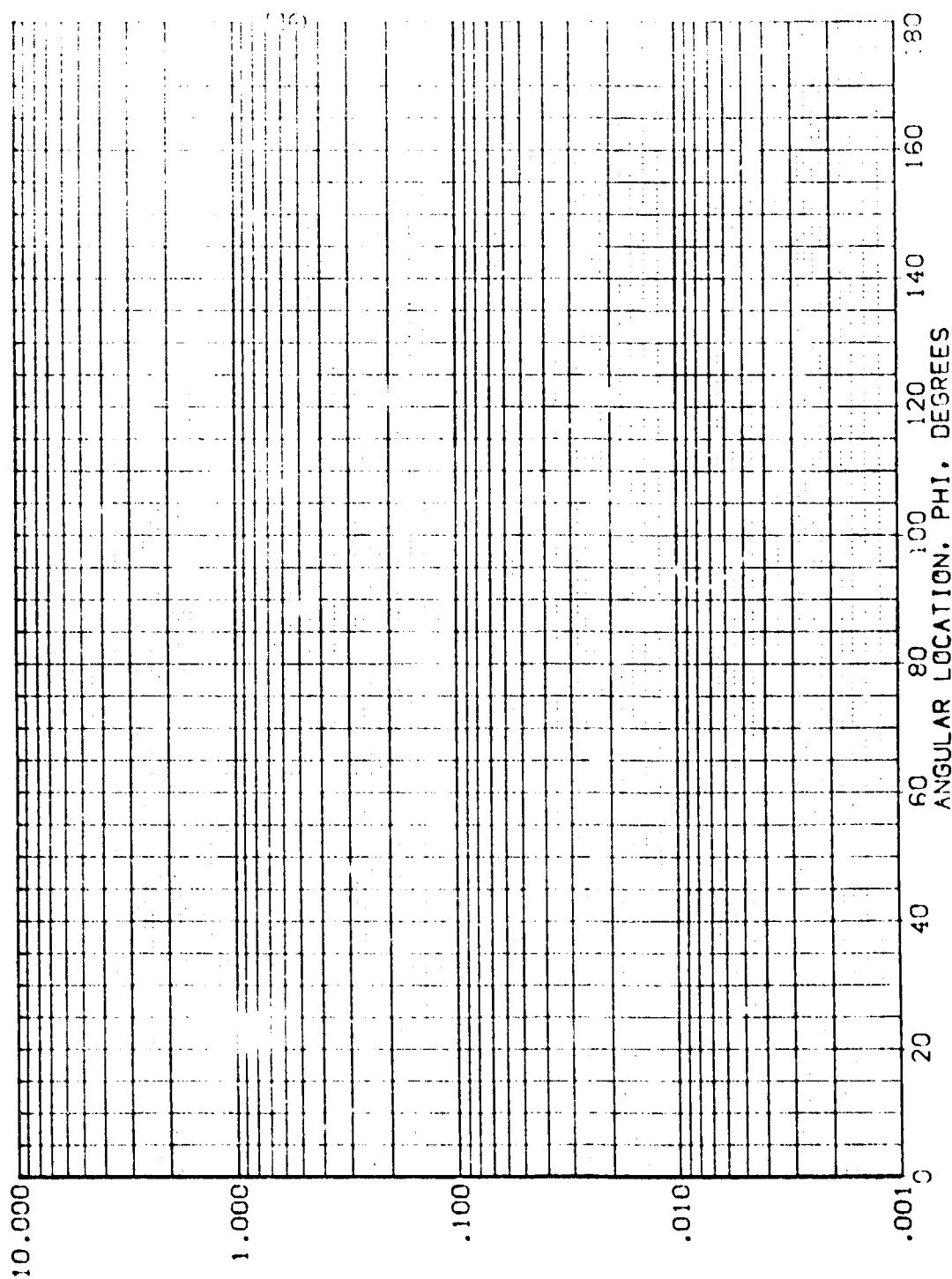


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .100

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT13) IHI8 Y8 X26
 (R0MT14) IHI8 Y8 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

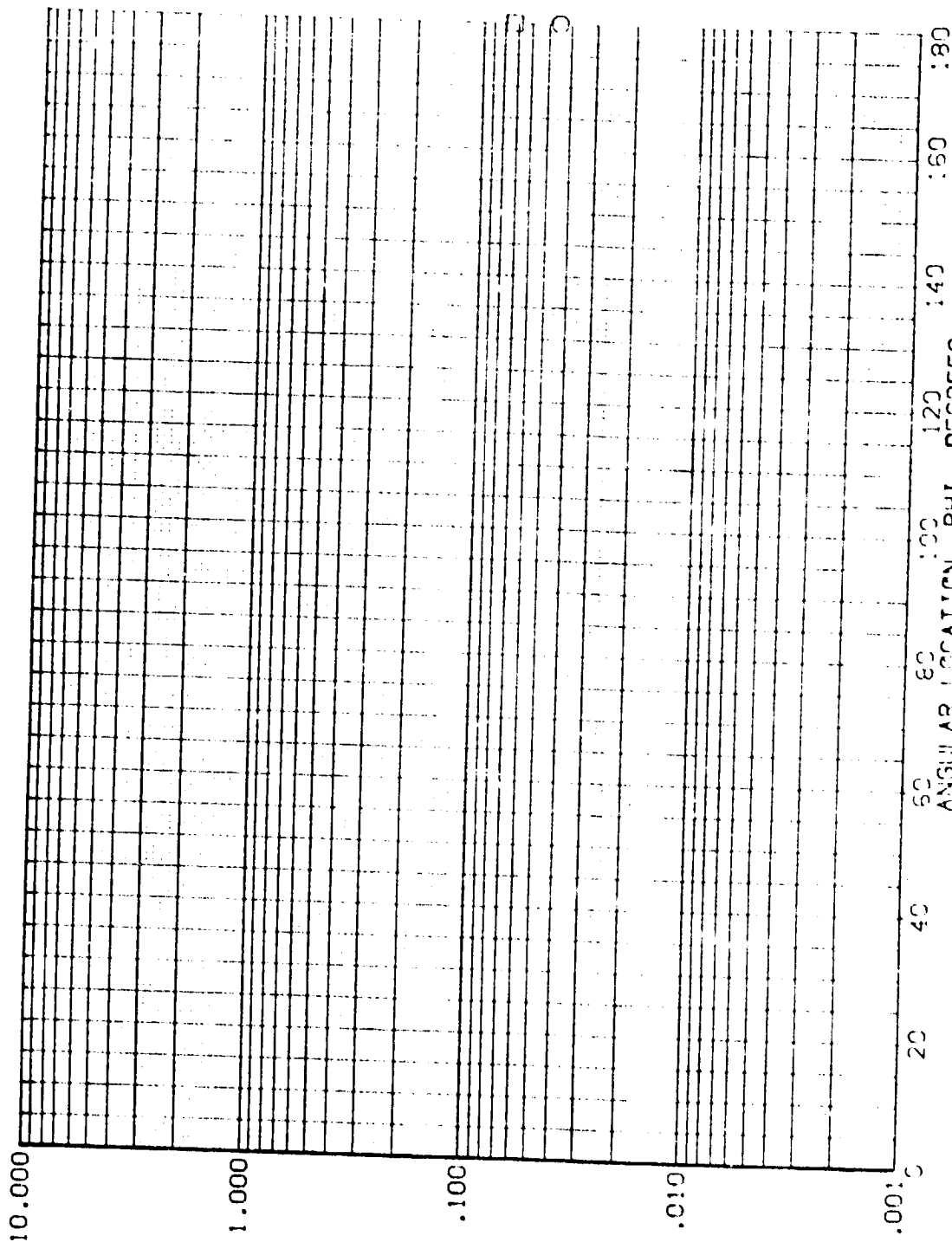


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RA/L = 4.817 HAW/HTE = .850 X/L = .150

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 1920137 1018 18 125
 1920141 1018 18 125

EXTERNAL NAME
 EXTERNAL NAME
 BETA ALPHA MACH X-REF
 1000 1000 5.000 1000
 1000 1000 5.000 1000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

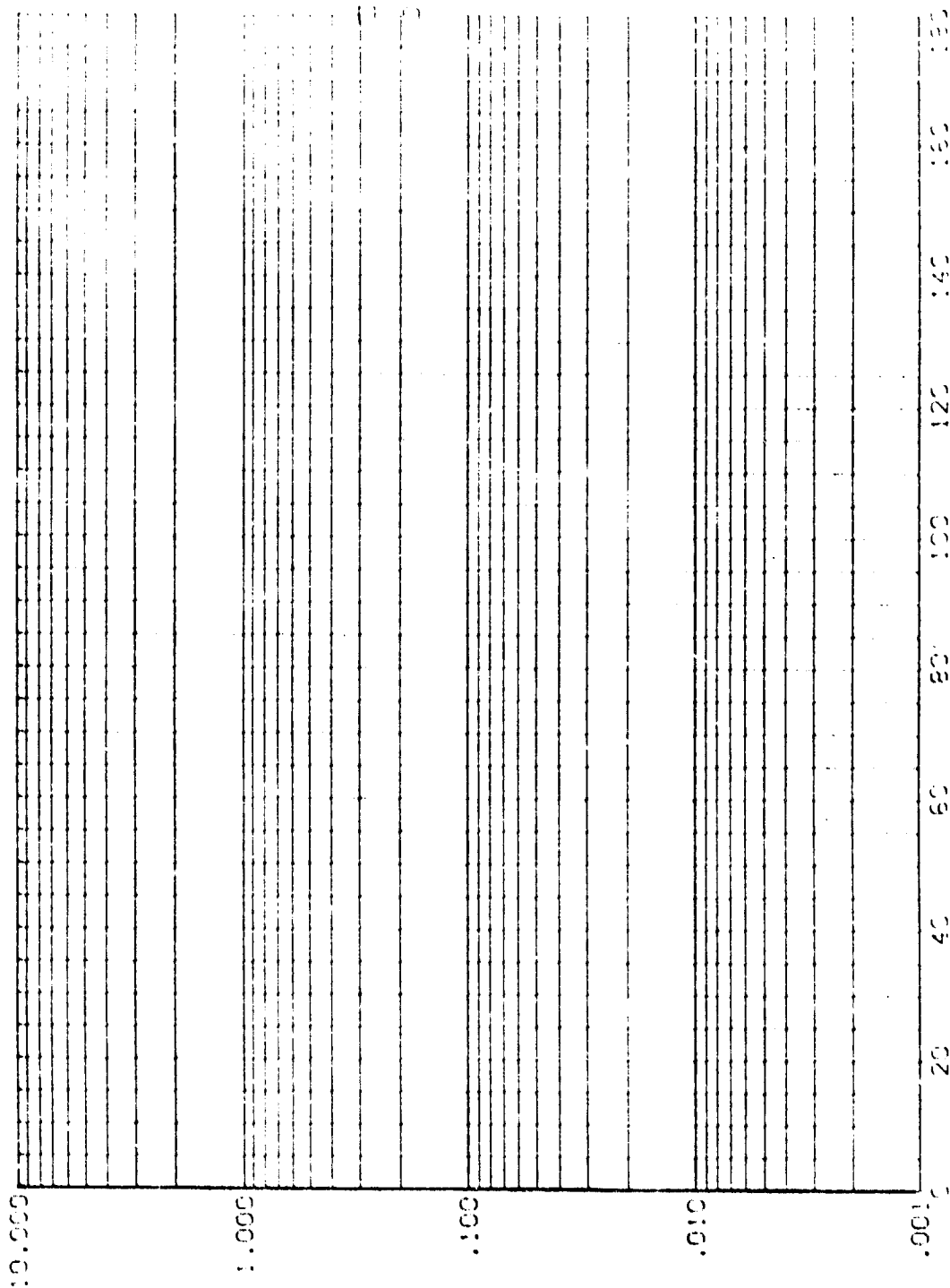


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

R₀/L = 4.8:7 H₀/H₁ = .850 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) 8 1H18 Y8 X26
 (PGMT14) 8 1H18 Y8 X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-WT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

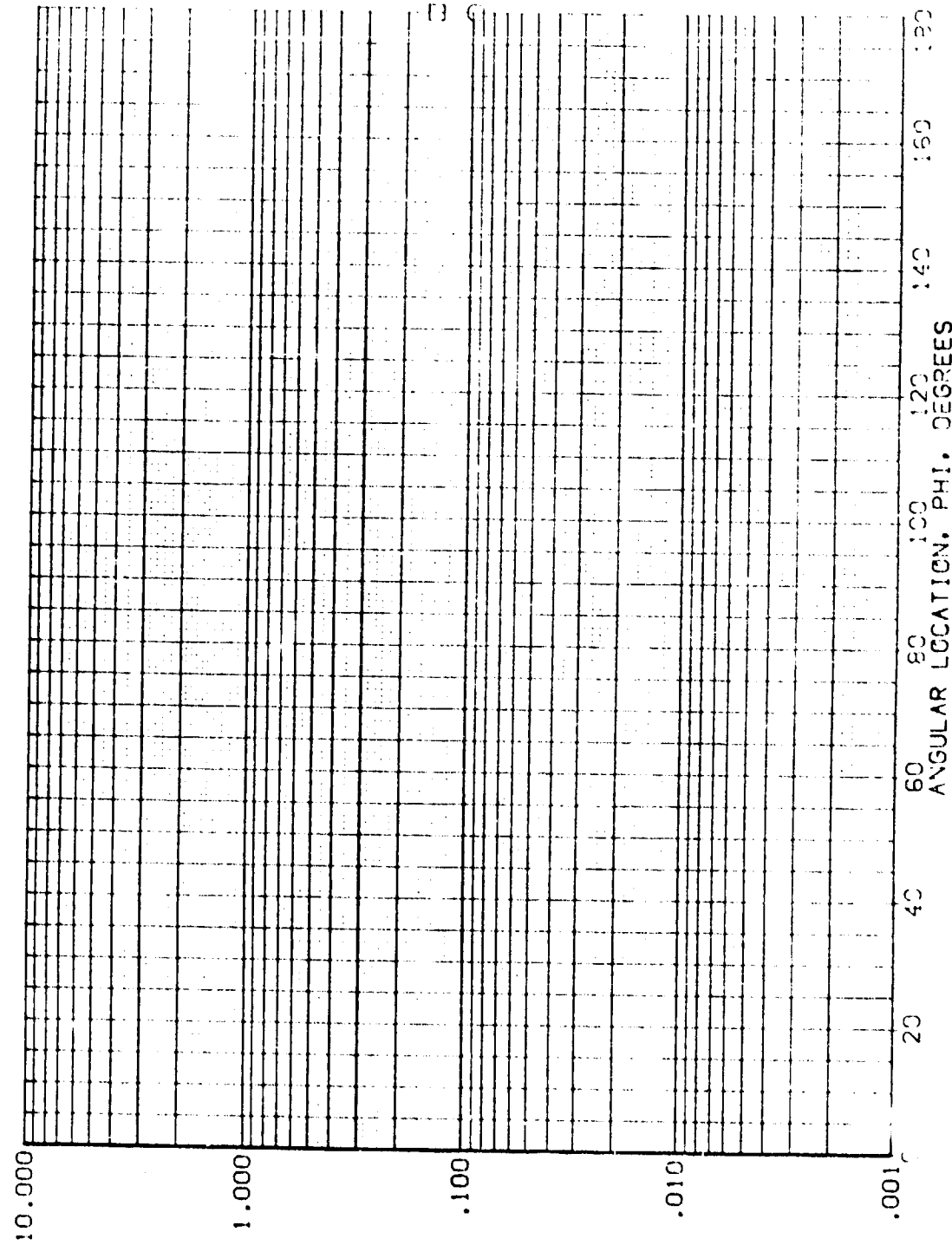


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/P-T = .850 X/L = .250

DATA SET SYMBOL
(RMT13)
(RMT14)

CONFIGURATION DESCRIPTION
IH18 TB X26
IH18 TB X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
K-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

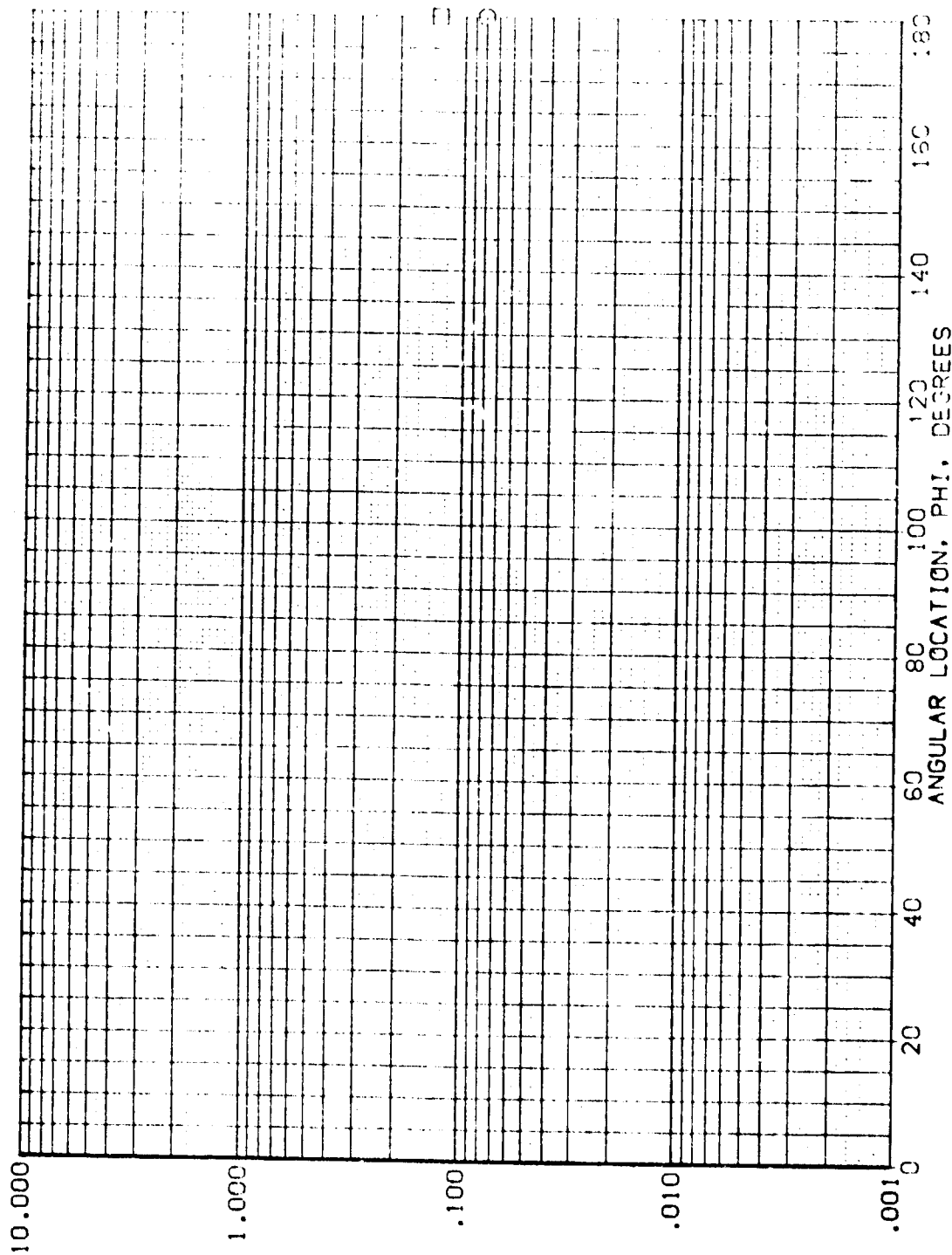


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .300

DATA SET SYMBOL (R0HT13) (R0HT14) E

CONFIGURATION DESCRIPTION IN18 T8 X26 IN18 T8 X26

EXTERNAL TANK EXTERNAL TANK

BETA .000 .000 ALPHA .000 -5.000 MACH 6.000 6.000 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

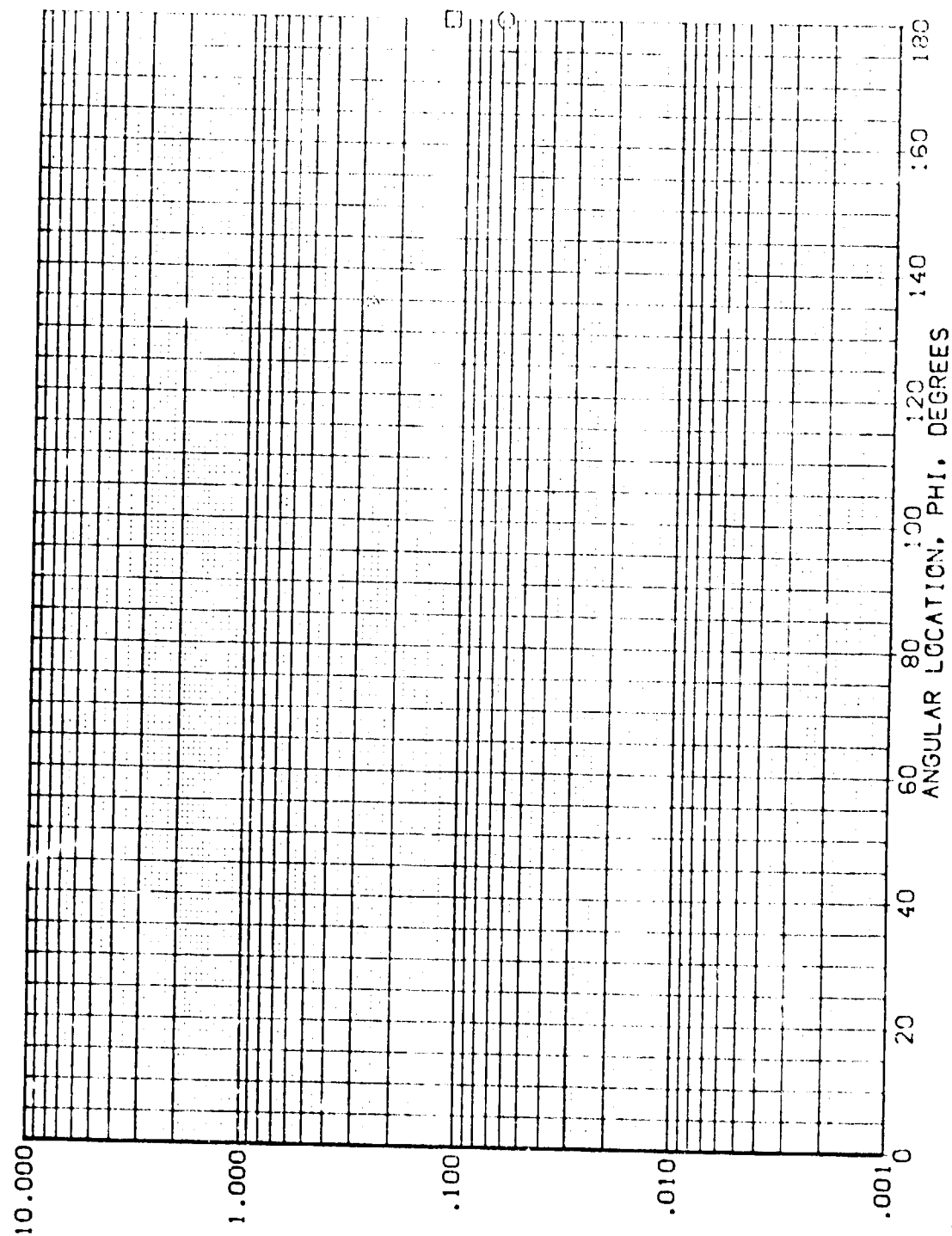


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .350

DATA SET SYMBOL
 (RCMT)3
 (RCMT)4

CONFIGURATION DESCRIPTION
 IH18 T8 X26
 IH18 T8 X26

BETA
 .000
 .000

ALPHA
 .000
 -5.000

MACH
 6.000
 6.000

X-HT
 .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

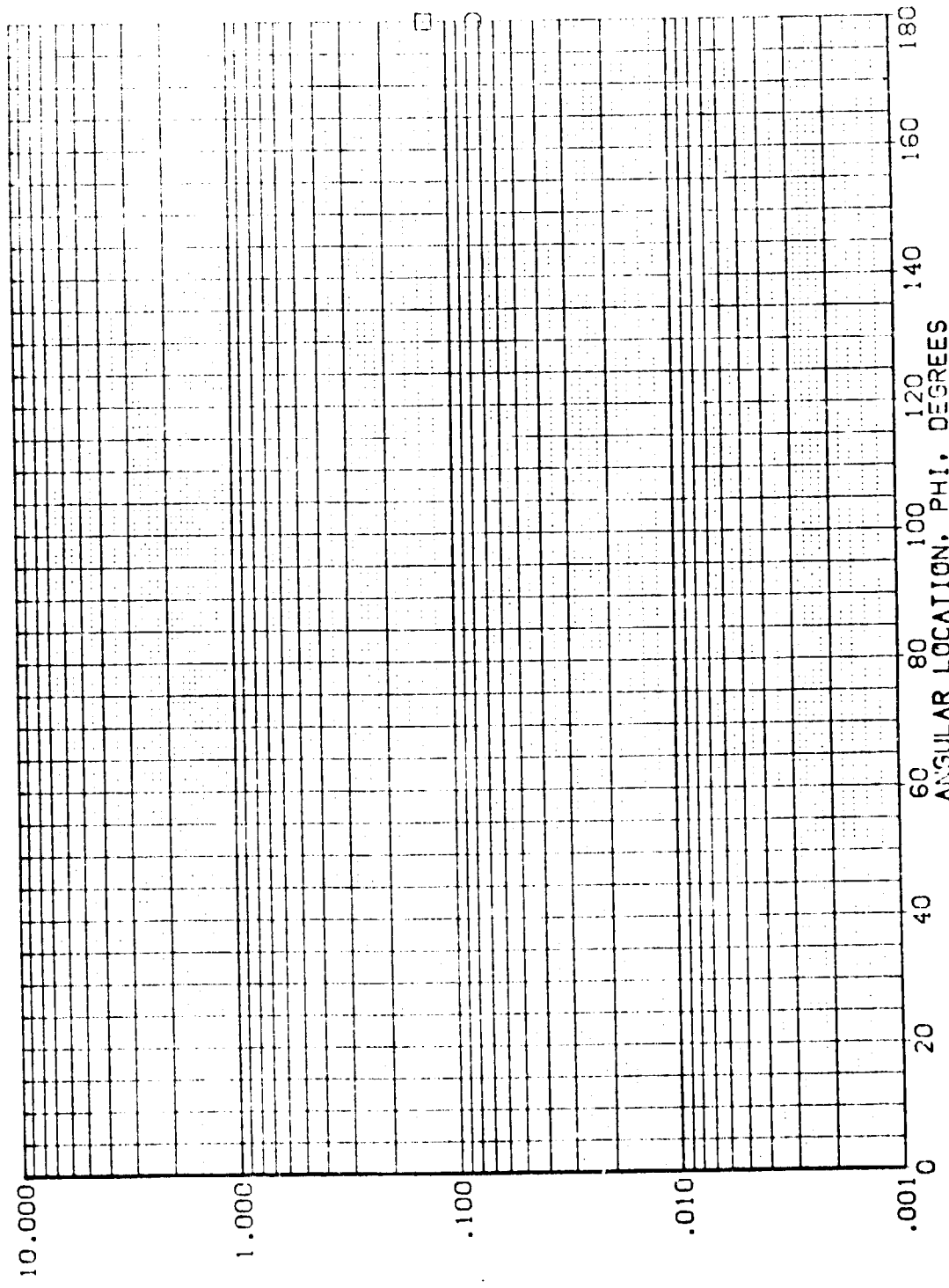


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .375

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) IM18 TB X26
 (RMT14) IM18 TB X26

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

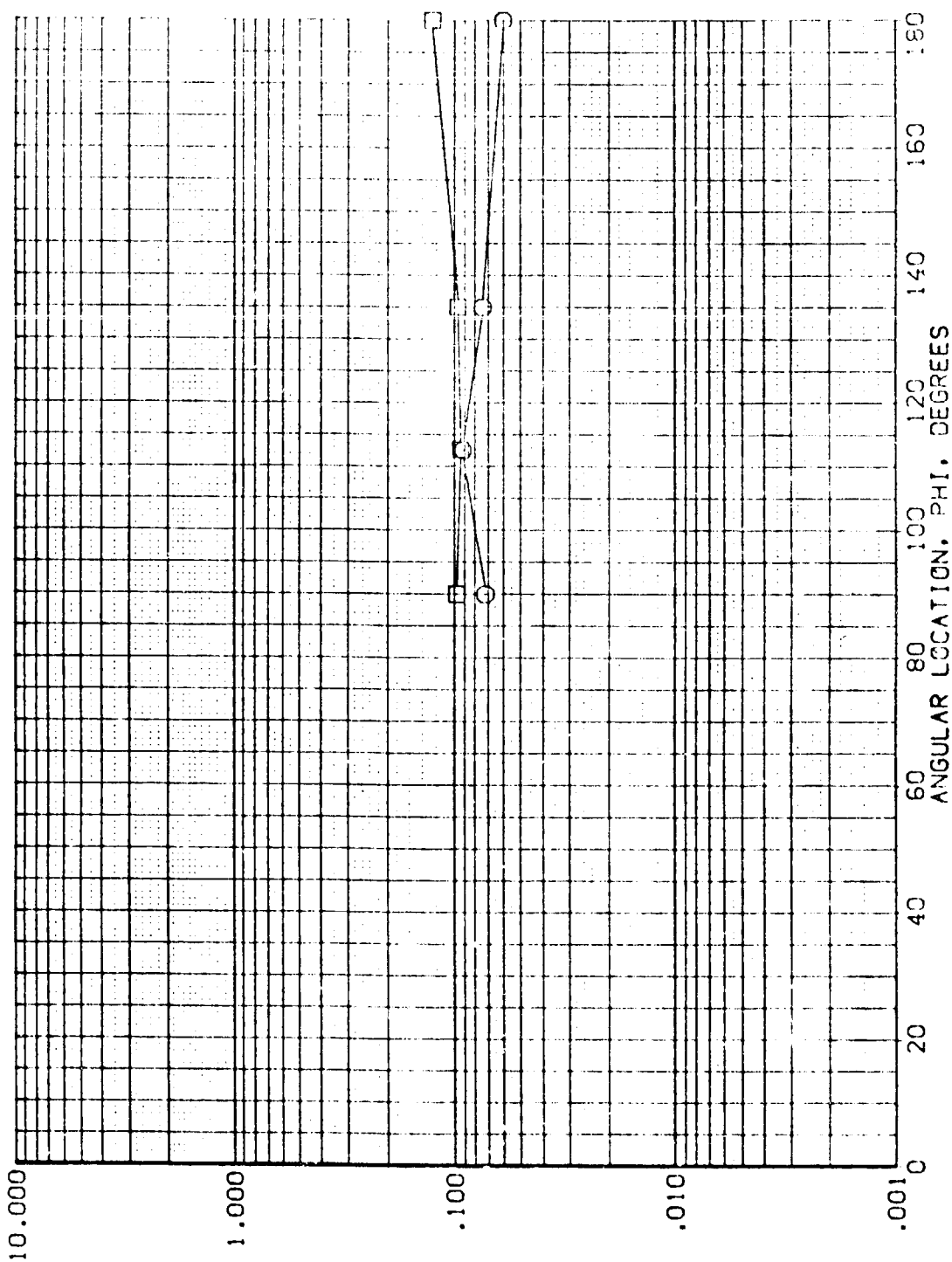


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = .850$ X/L = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT13) IM18 T8 X26
 (R0MT14) IM18 T8 X26

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

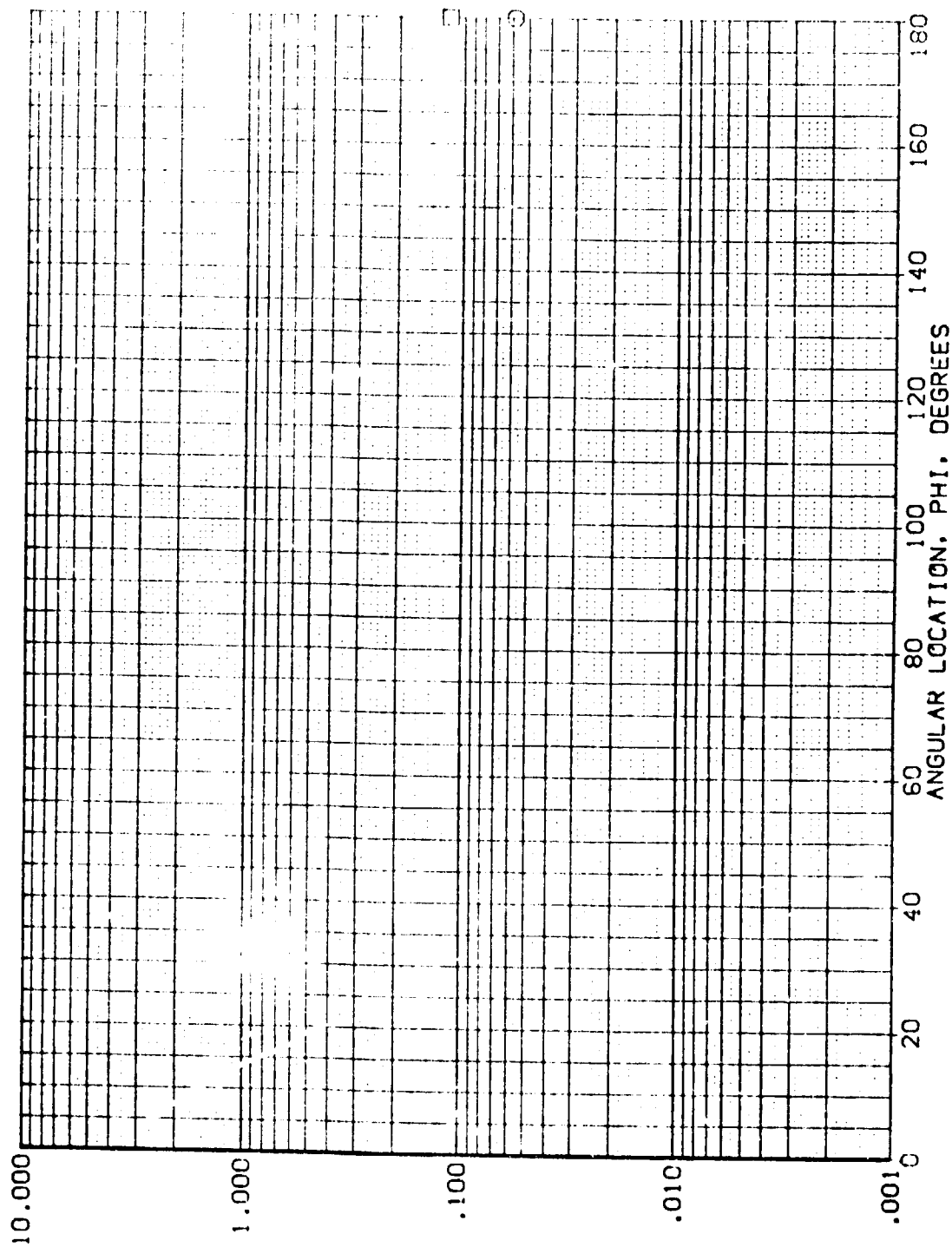


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .425

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) IM18 T8 X26
 (RMT14) IM18 T8 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA .000
 .000

ALPHA .000
 -5.000

MACH 6.000
 6.000

X-HT .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

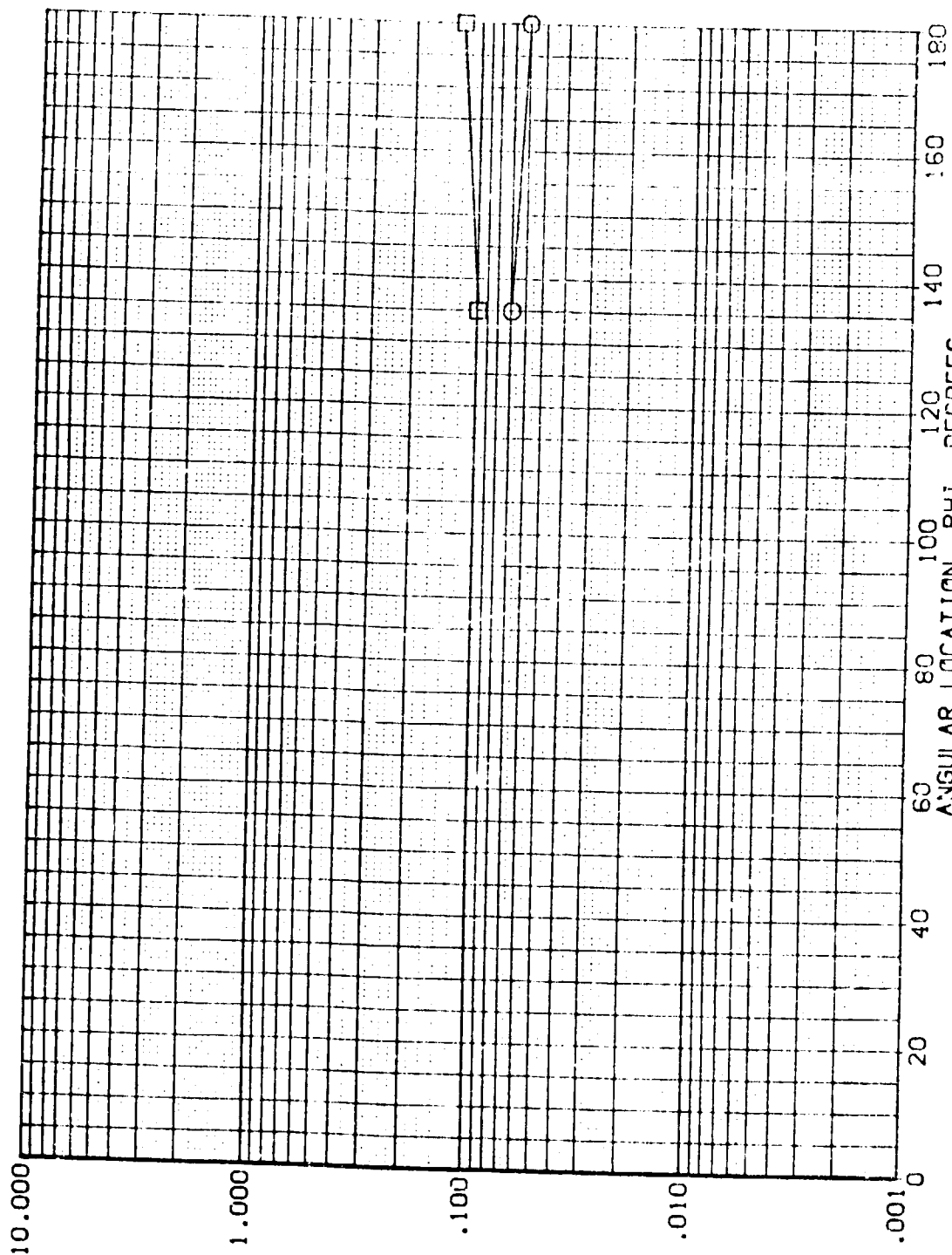


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = .850$ X/L = .450

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT13) IHI8 T8 X26
 (R0HT14) IHI8 T8 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH Y-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

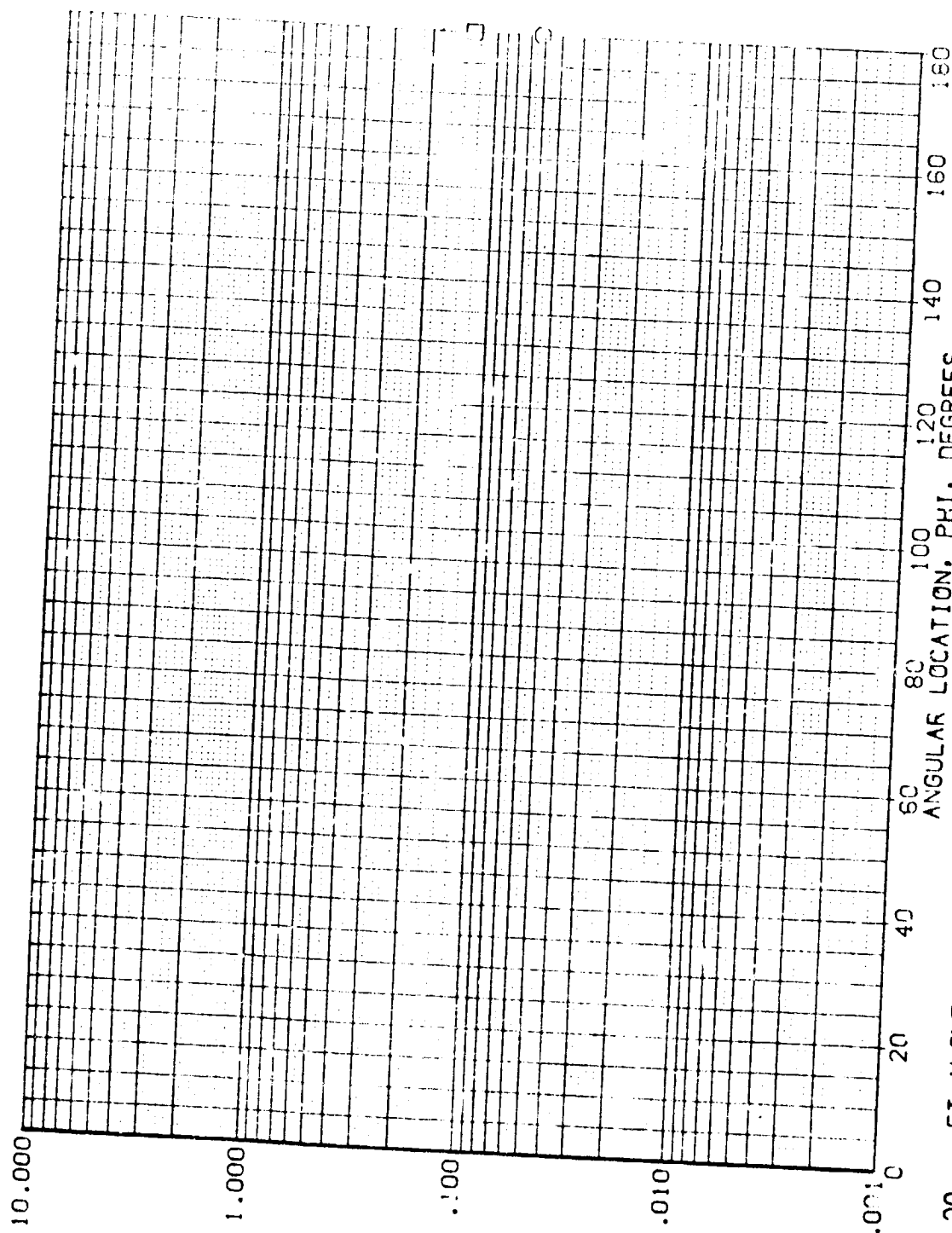


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS
 $RN/L = 4.817$ $HAW/HF = .850$ $X/L = .475$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RHT13) IM18 T8 X26
 (RHT14) IM18 T8 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA .000 .031
 ALPHA .000 6.000
 MACH -5.000 6.000
 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

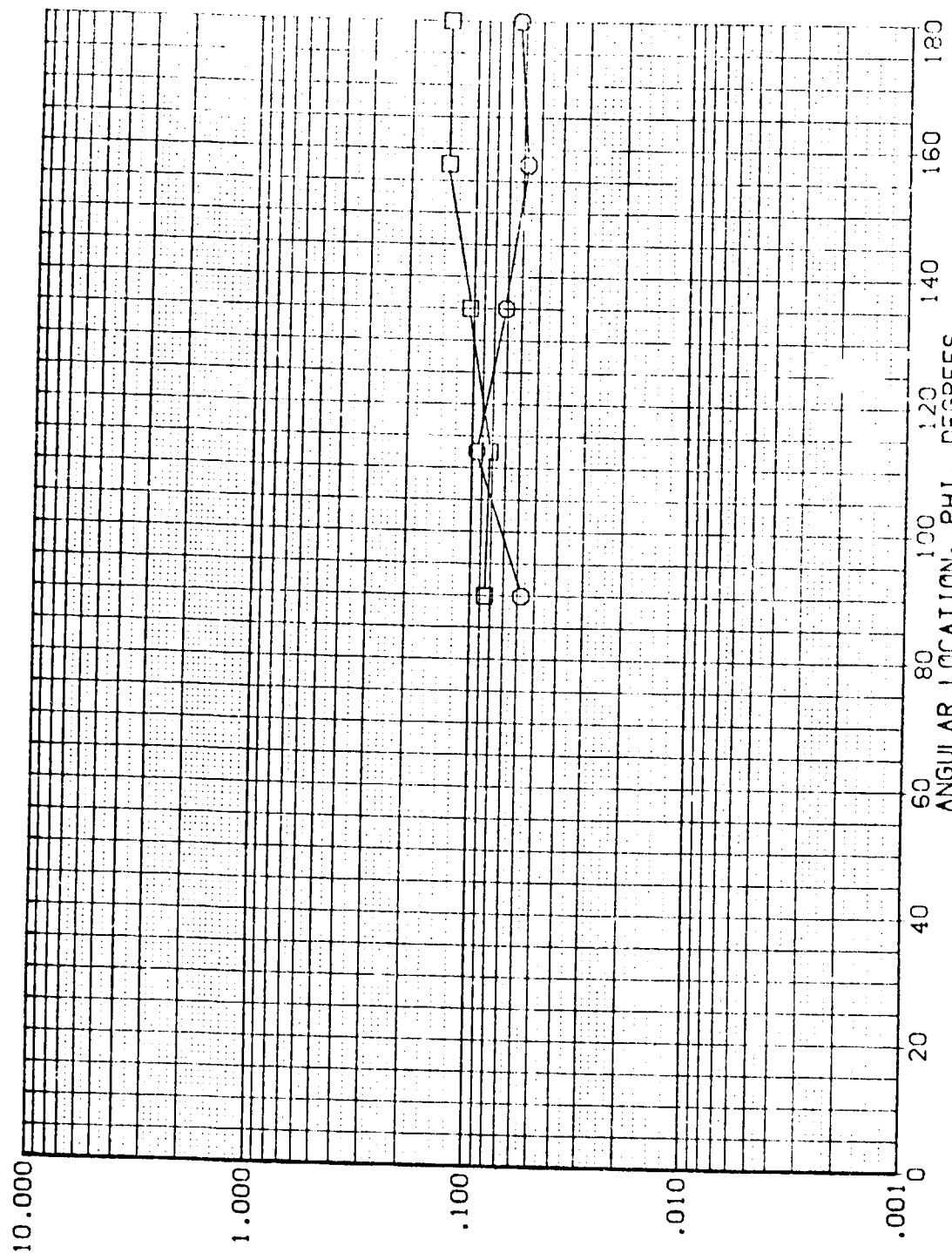


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

$RN'/L = 4.817$ $HAU/HT = .850$ $X/L = .500$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R04T13) I118 T8 X26
 (R04T14) I118 T8 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

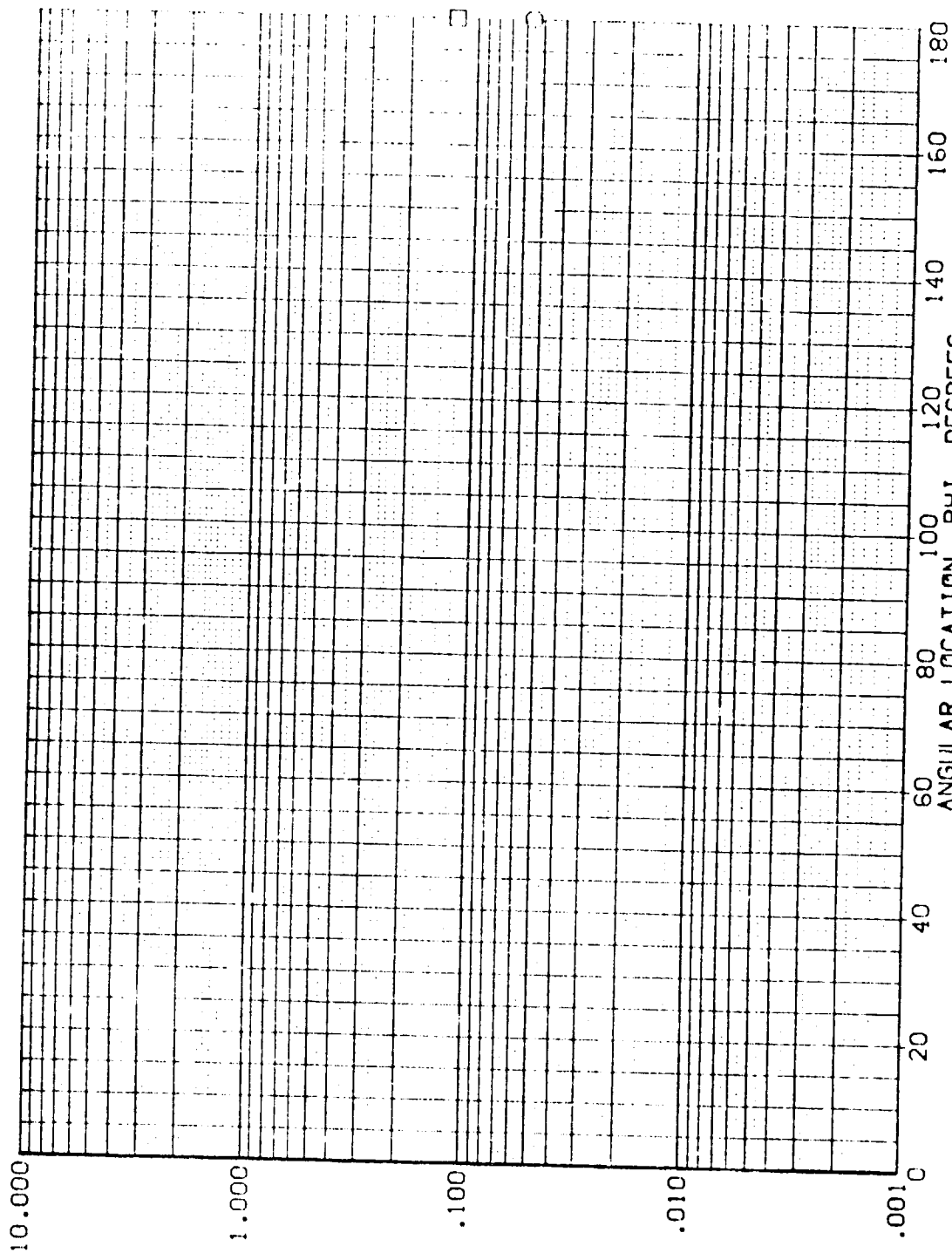


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .525

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RHT13) □ IH18 TB X26
 (RHT14) □ IH18 TB X26

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

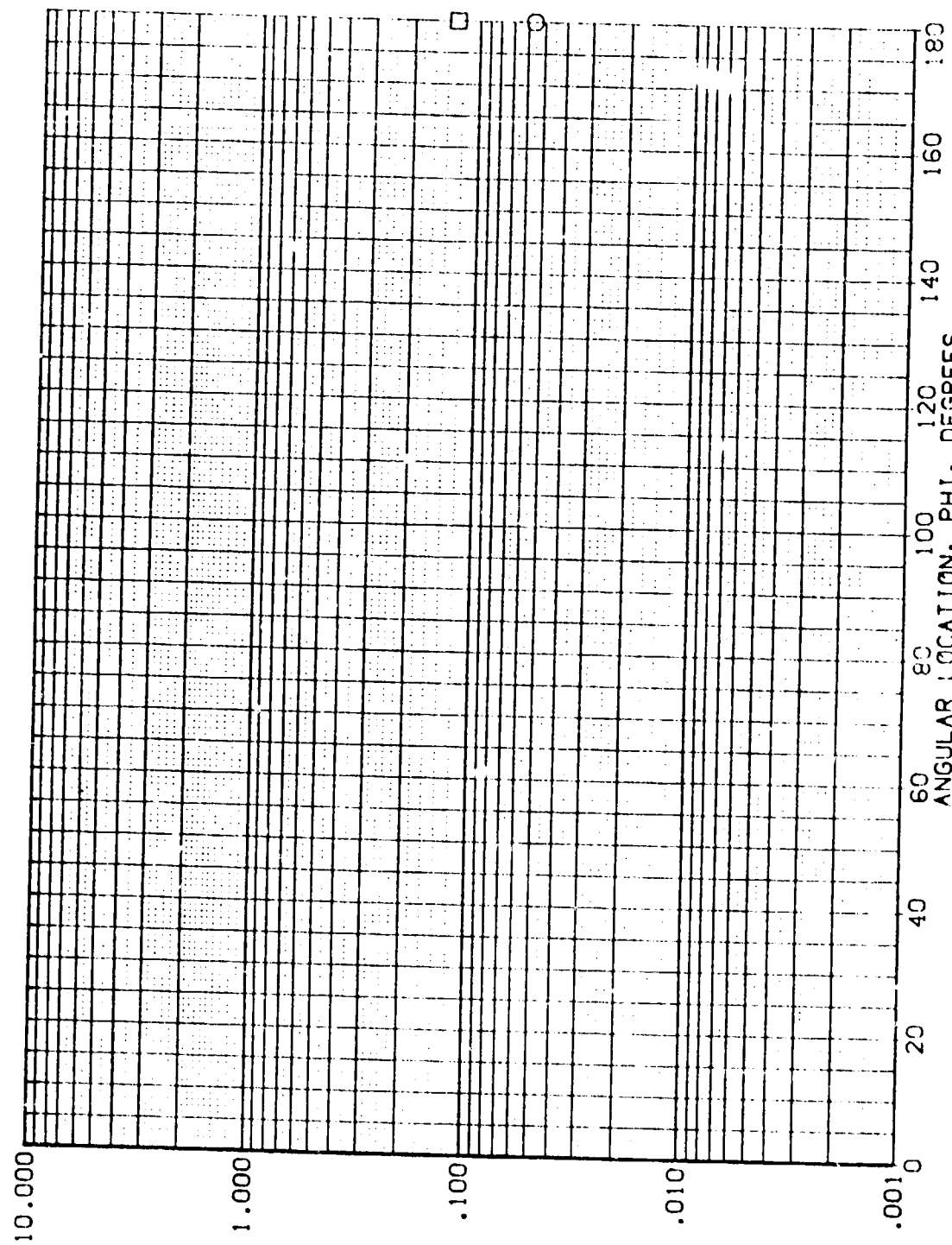


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = .850$ $X/L = .550$

DATA SET SYMBOL (RIGHT13) (RIGHT14)

CONFIGURATION DESCRIPTION IM18 TB X26 IM18 TB X26

EXTERNAL TANK EXTERNAL TANK

BETA .000 .000

ALPHA .000 -5.000

MACH 5.000 5.000

X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

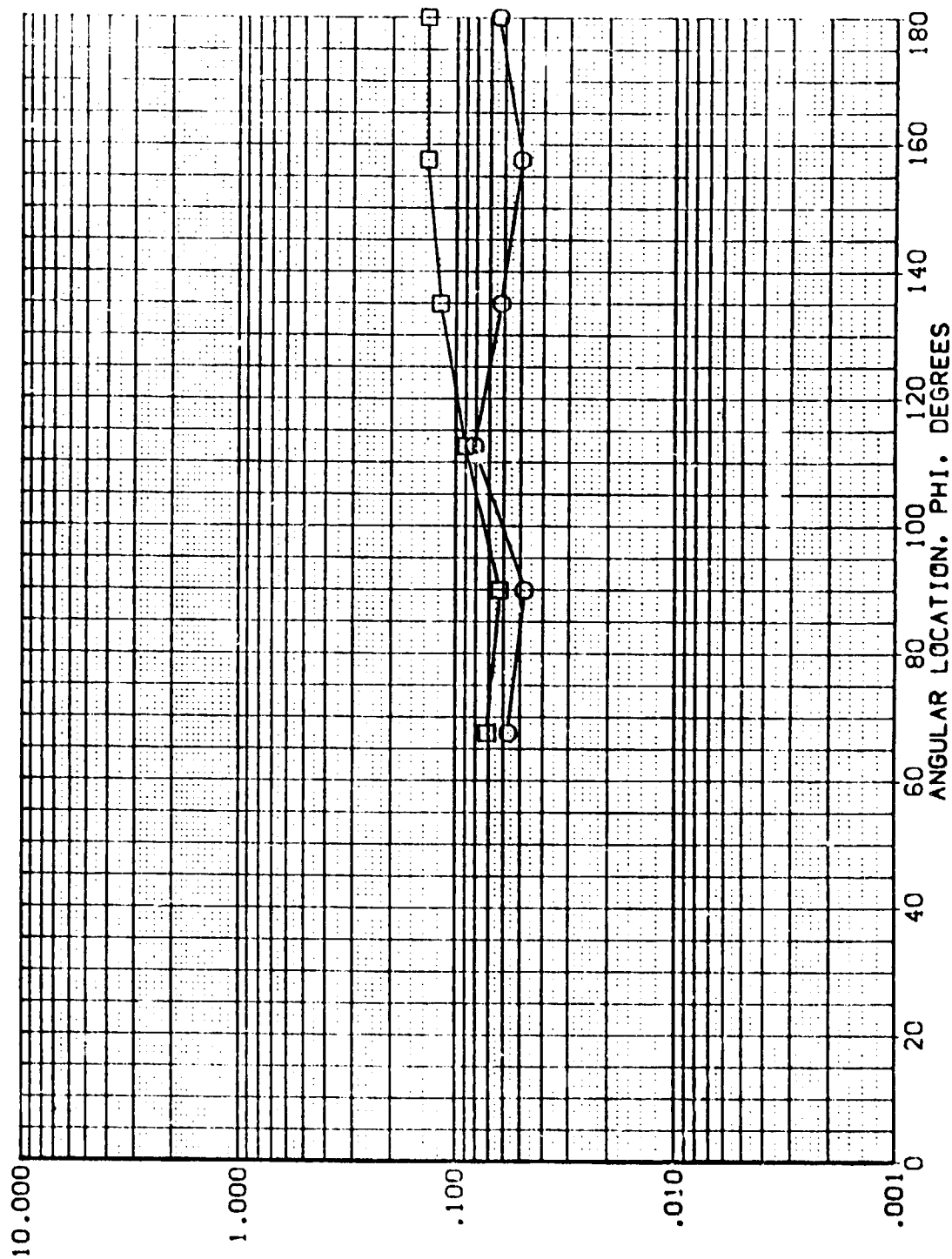


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT13) [H18 T8 X26]
 (RQMT14) [H18 T8 X26]

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

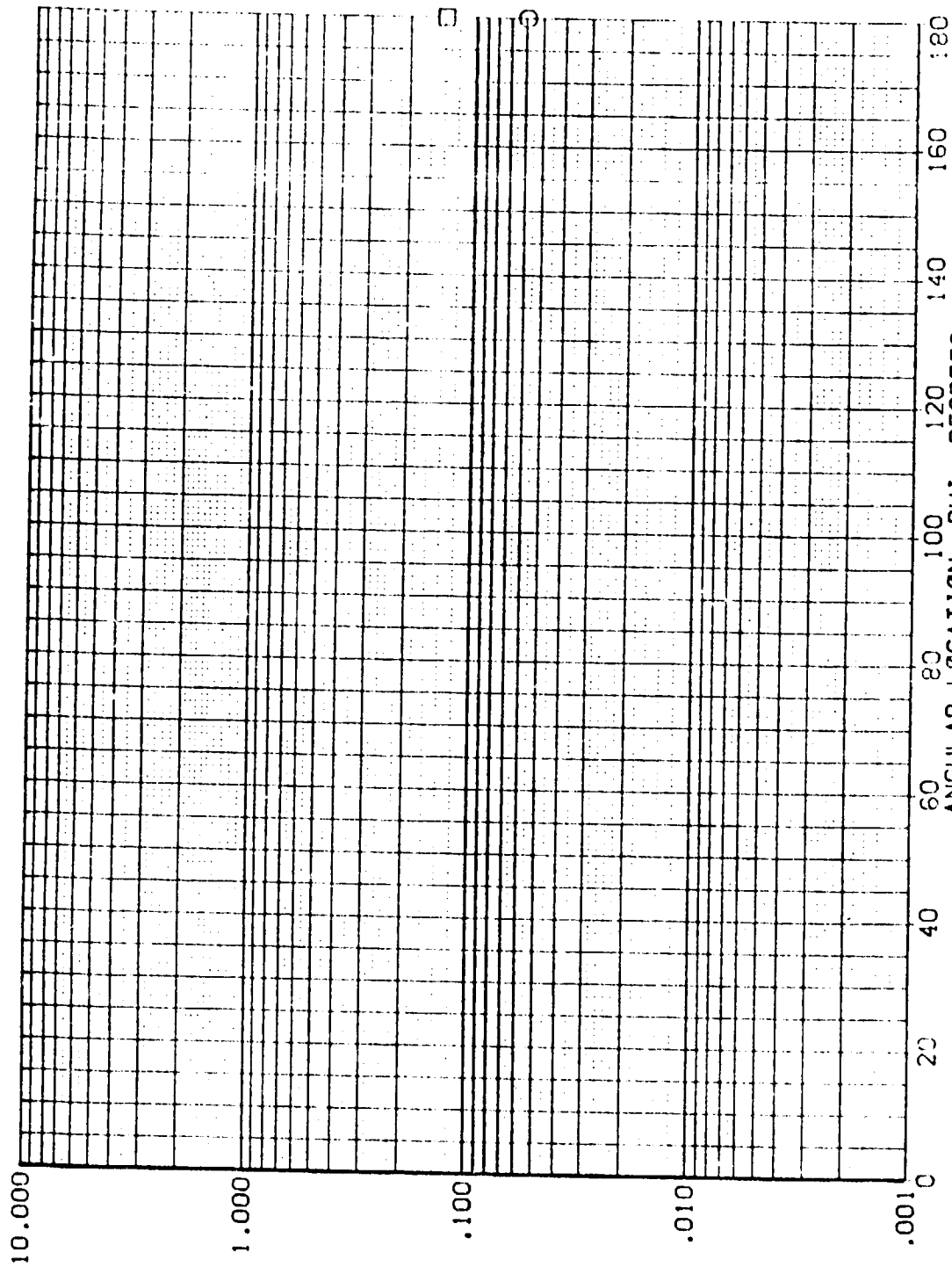


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 h_{AW}/h_T = .850 X/L = .650

DATA SET SYMBOL
(RMT13)
(RMT14)

CONFIGURATION DESCRIPTION
IN:8 TO X26
IN:8 TO X26

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH X-NT
.000 .000 6.000 .031
-5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

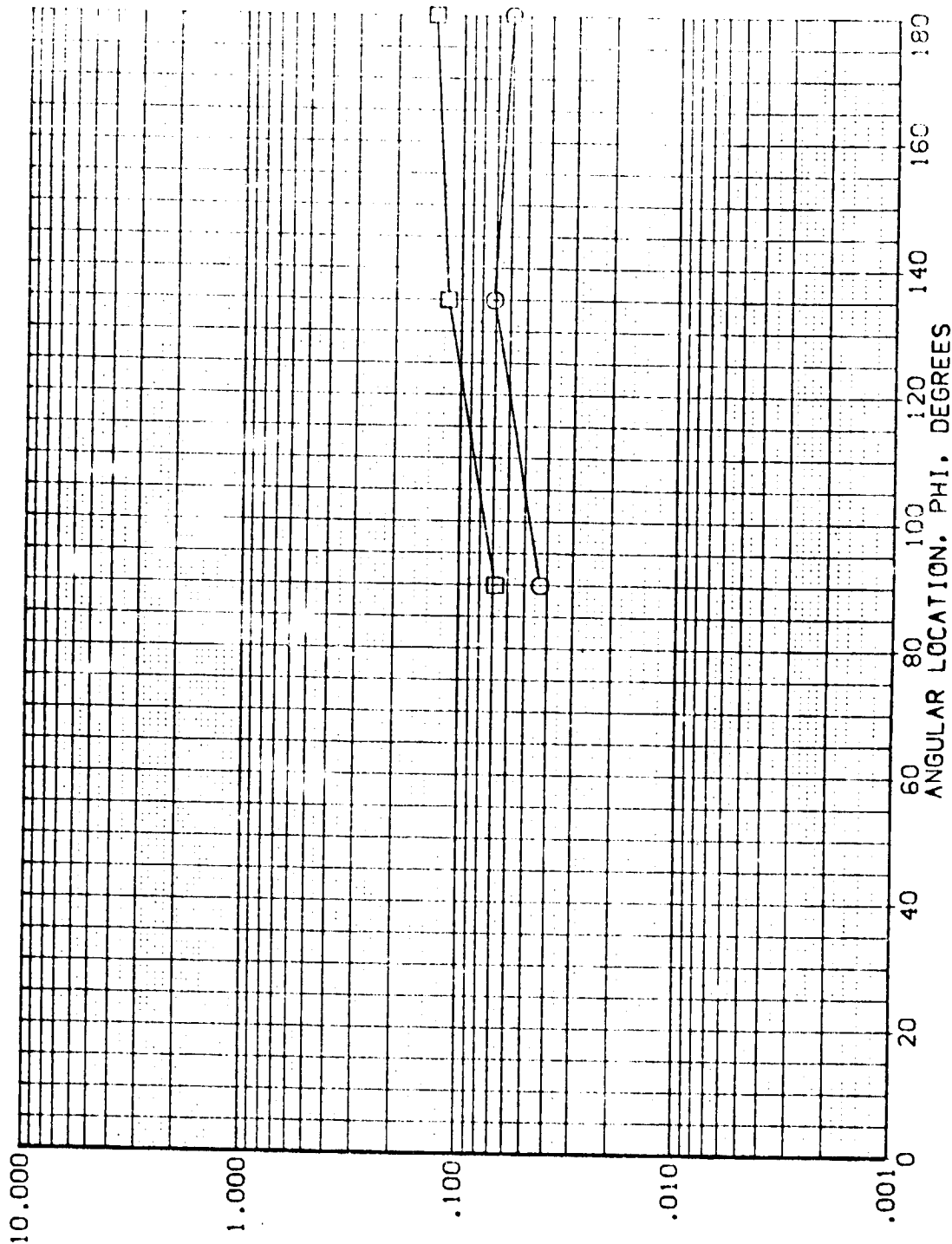


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

$RN/L = 4.817$ $HAW/HT = .850$ $X/L = .700$

DATA SET SYMBOL
(POINT 13)
(POINT 14)

CONFIGURATION DESCRIPTION
IM18 TB 426
IM18 TB 426

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
5.000
6.000

X-WT
.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

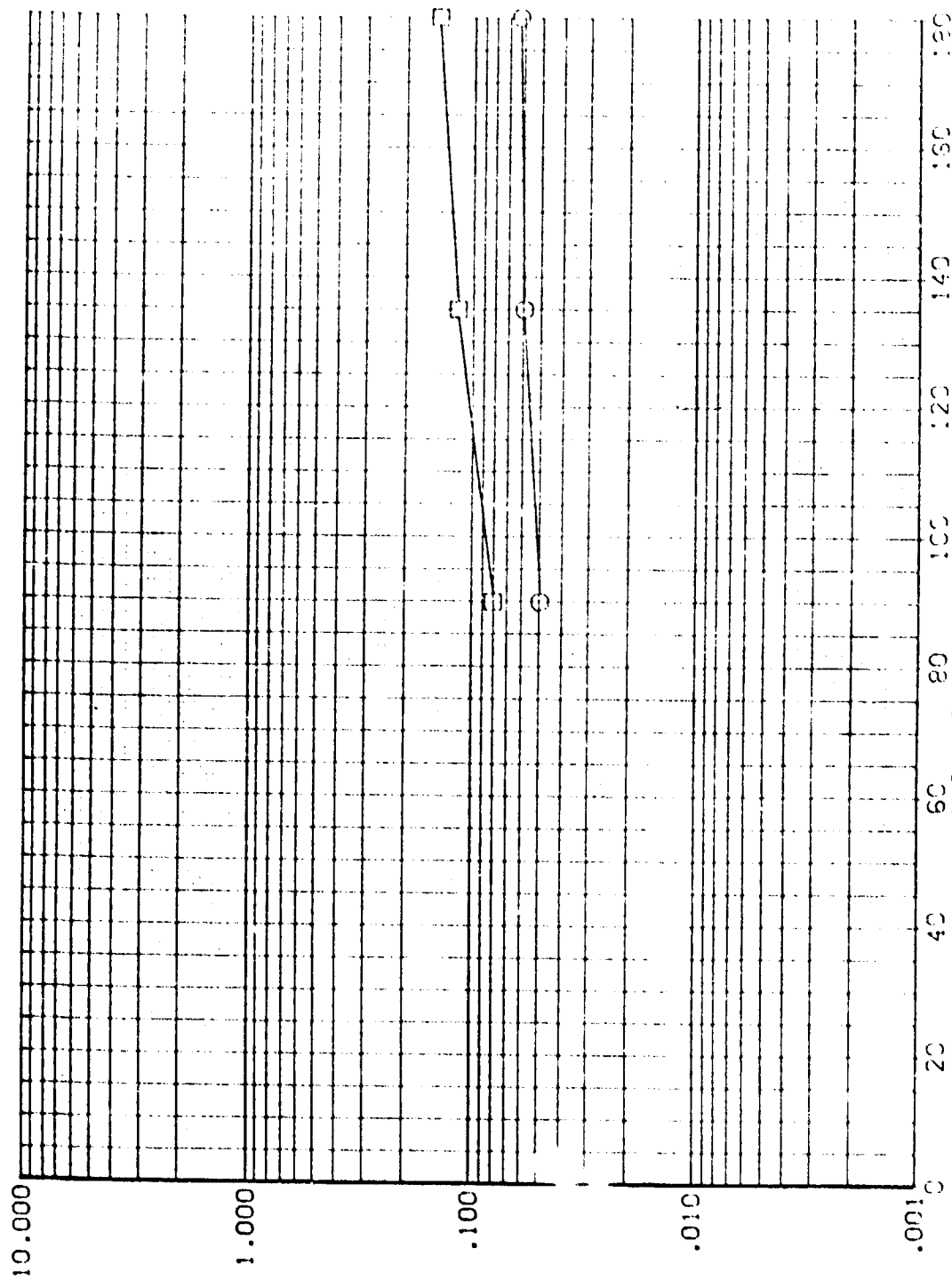


FIG 20 ET ALGVE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 h_{REF}/h_{REF} = .850 X/L = .800

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(POINT 3) 1H18 78 X26
(POINT 4) 1H18 78 X26

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HY .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

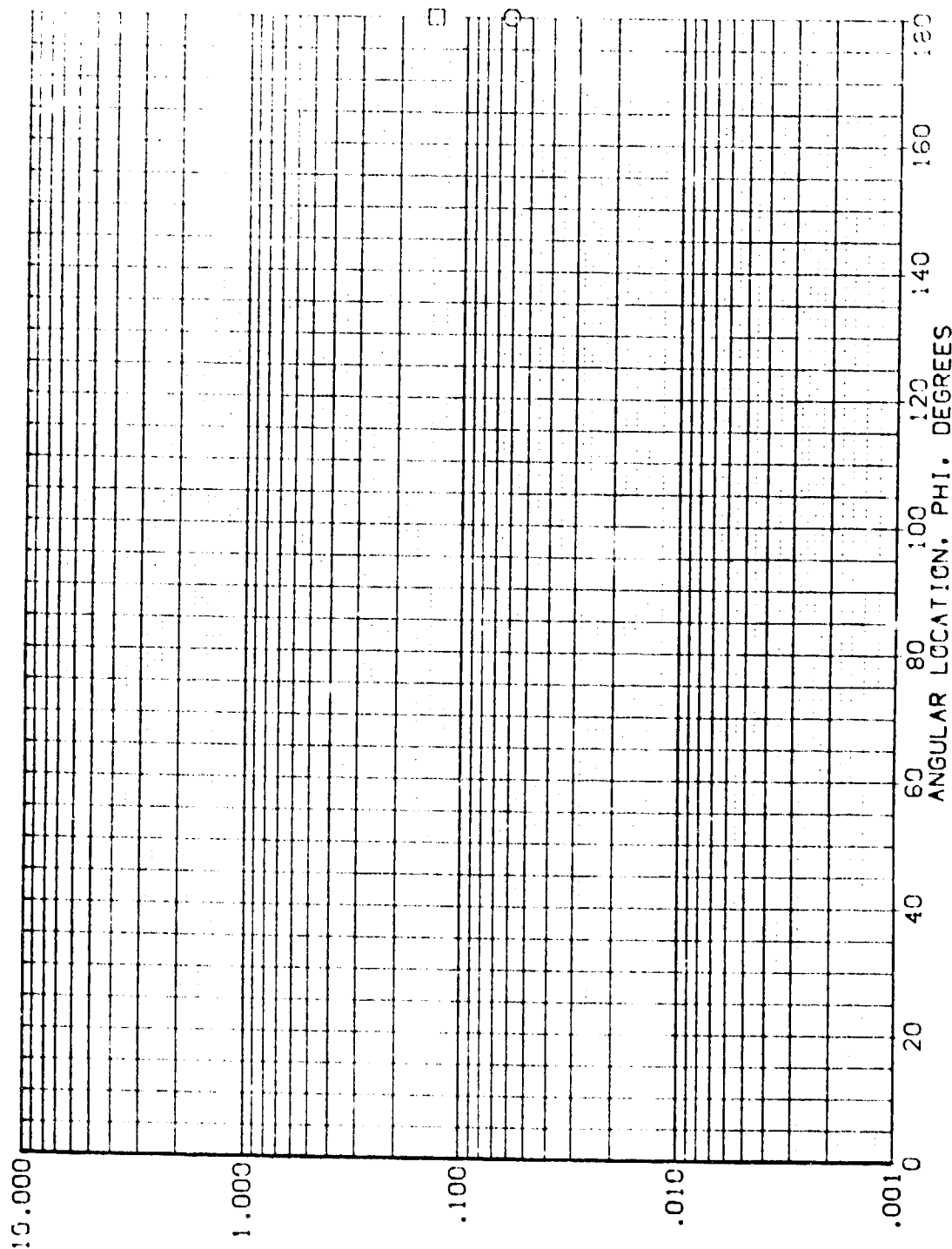


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = .850 X/L = .900

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) IM18 TB X26
 (RMT14) IM18 TB X26

EXTERNAL TANK
 EXTERNAL TANK

BETA .000
 .000

ALPHA .000
 -5.000

MACH 6.000
 6.000

X-HT .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

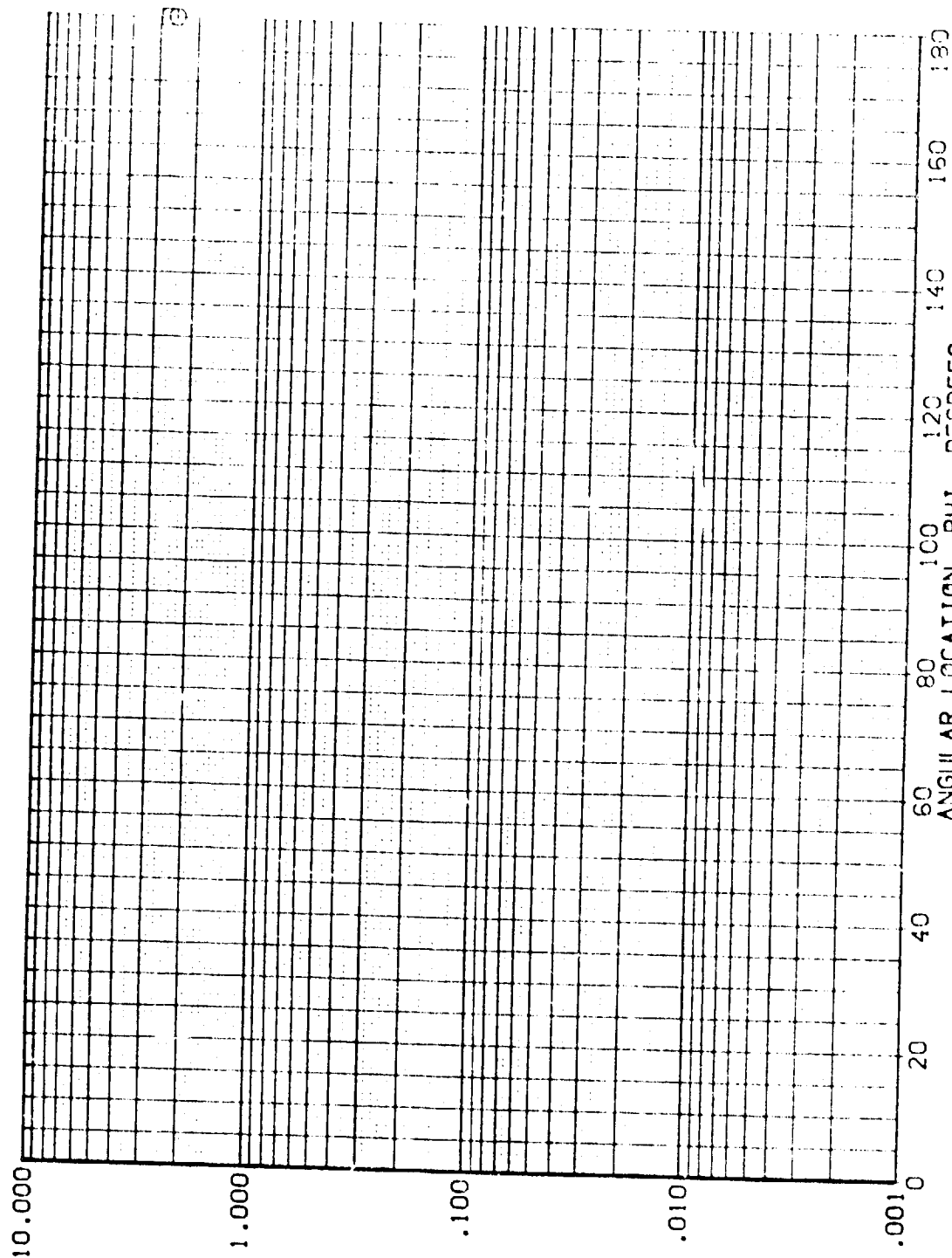


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL
(RMT13)
(RMT14)

CONFIGURATION DESCRIPTION
IM18 TB X26
IM18 TB X26

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

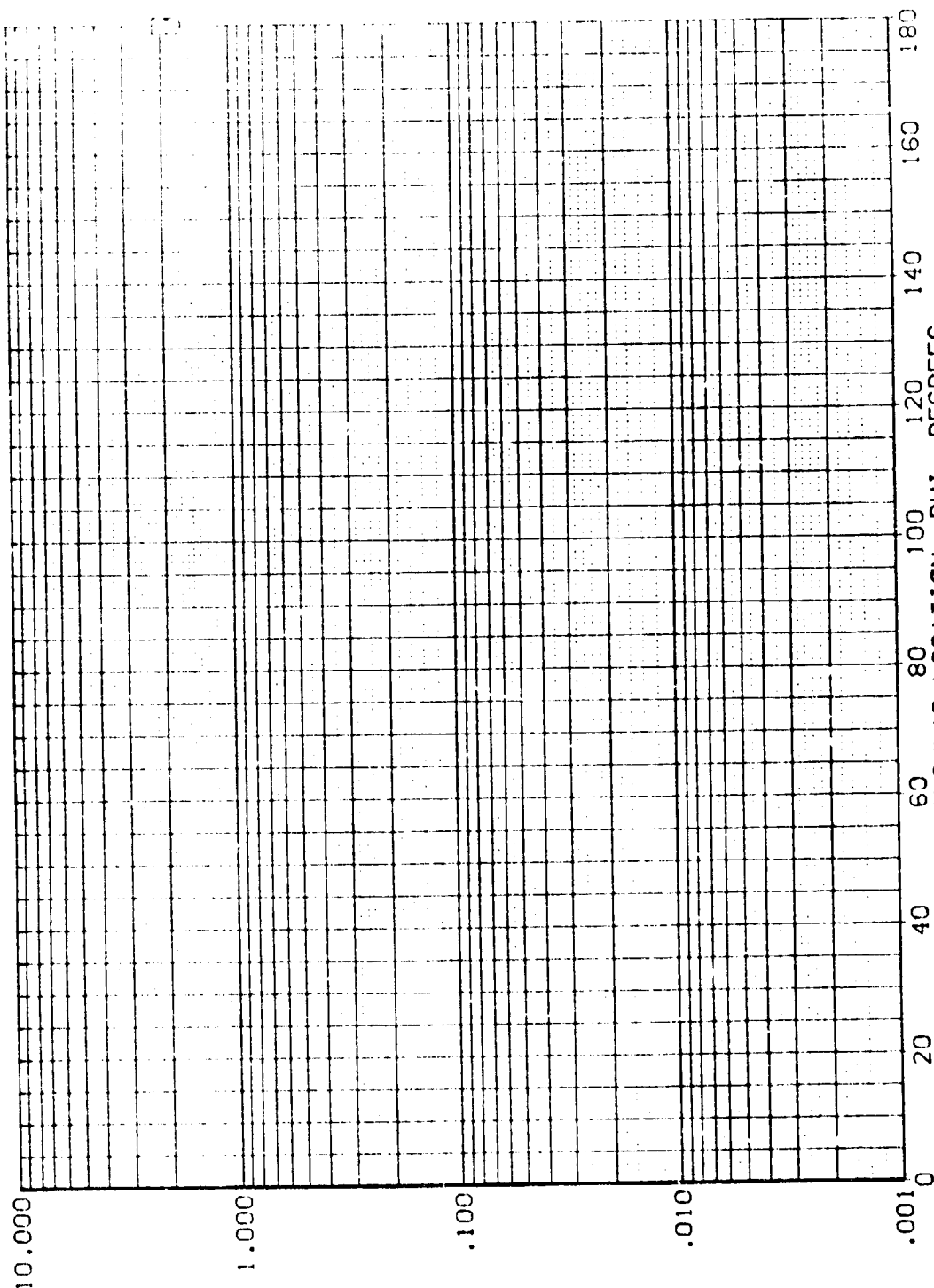


FIG 20 ET ALONE EATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .010

DATA SET SYMBOL CONFIGURATION DESCRIPTION:

(RCHT13)
(RCHT14)

H18 TB X26
H18 TB X26

EXTERNAL TANK
EXTERNAL TANK

BETA

.000
.000

ALPHA

.000
-5.000

MACH

5.000
5.000

X-HT

.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

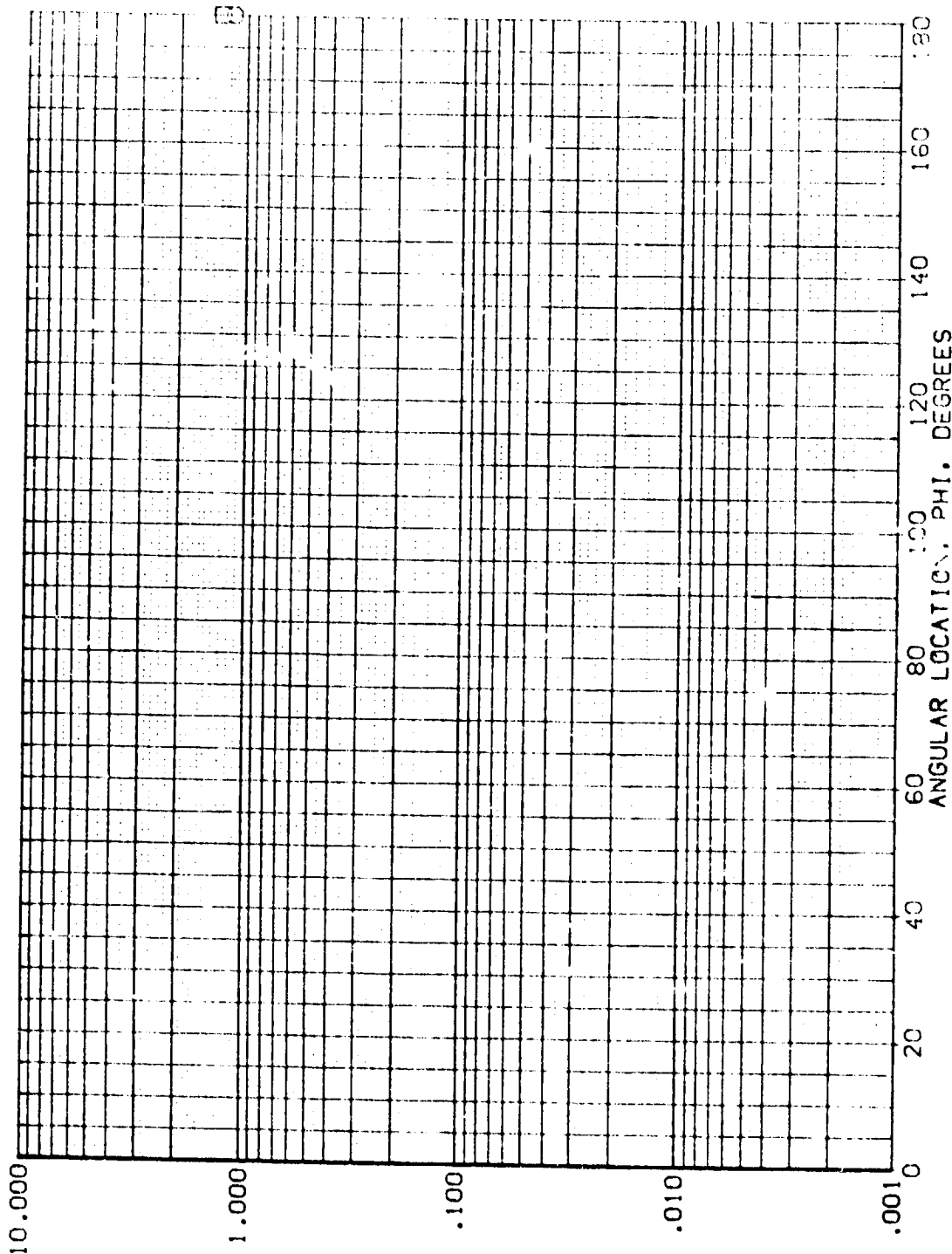


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = 1.000$ X/L = .020

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) IH18 T8 X26
 (RMT14) IH18 T8 X26

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

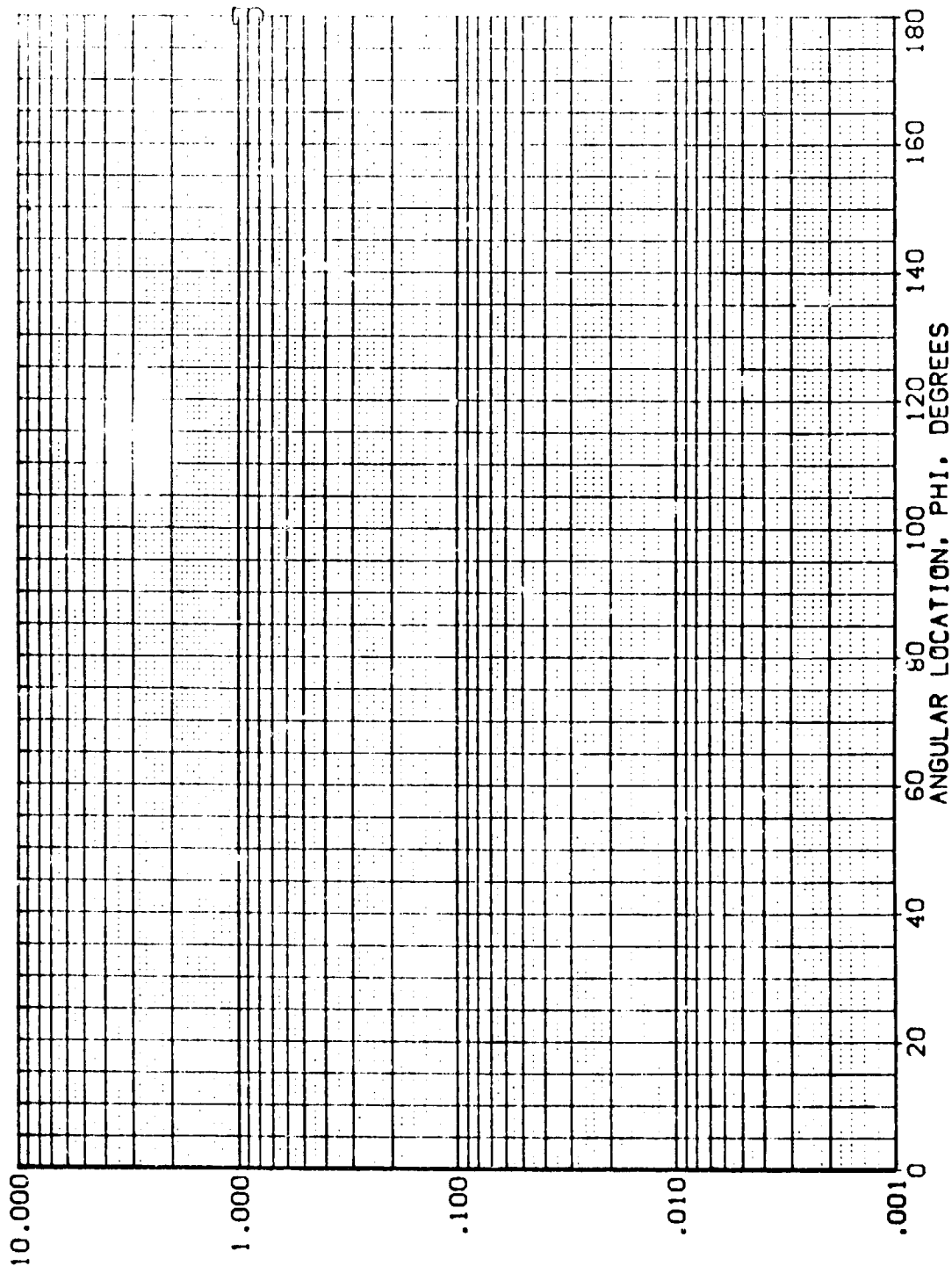


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .060

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT13) IM18 T8 X26
 (RMT14) IM18 T8 X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 ALPHA .000
 MACH 6.000
 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

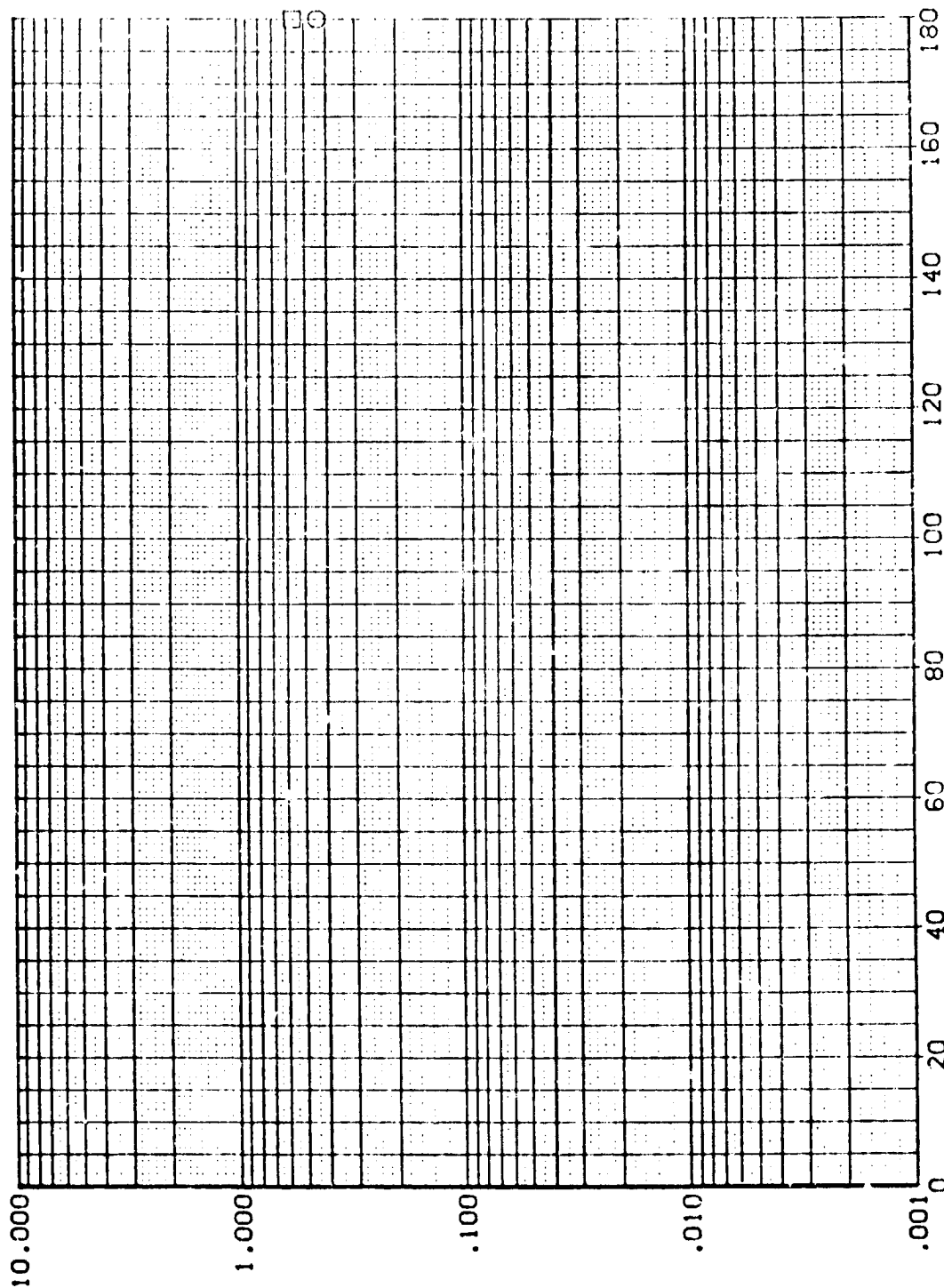


FIG 20 ET ALONE HEATING RATE VARIATION WITH PH. - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .100

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(RMT1:3) [H19 T8 X26]
(RMT1:4) [H18 T8 X26]

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
A-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

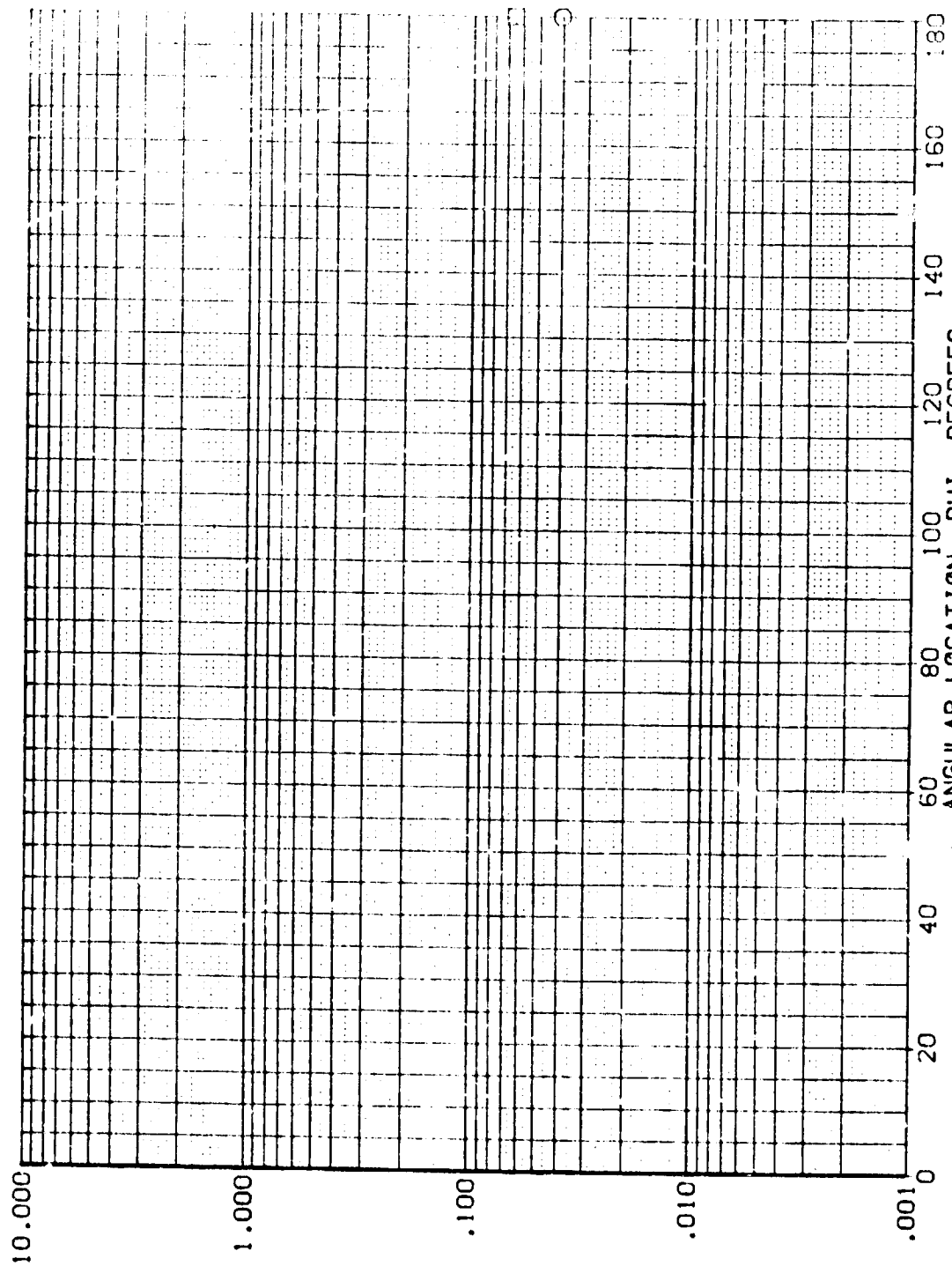


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .150

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (ROMT13) IH18 T8 X26
 (ROMT14) [IH18 T8 X26

EXTERNAL TANK BETA ALPHA MACH X-HT
 EXTERNAL TANK .000 .000 5.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

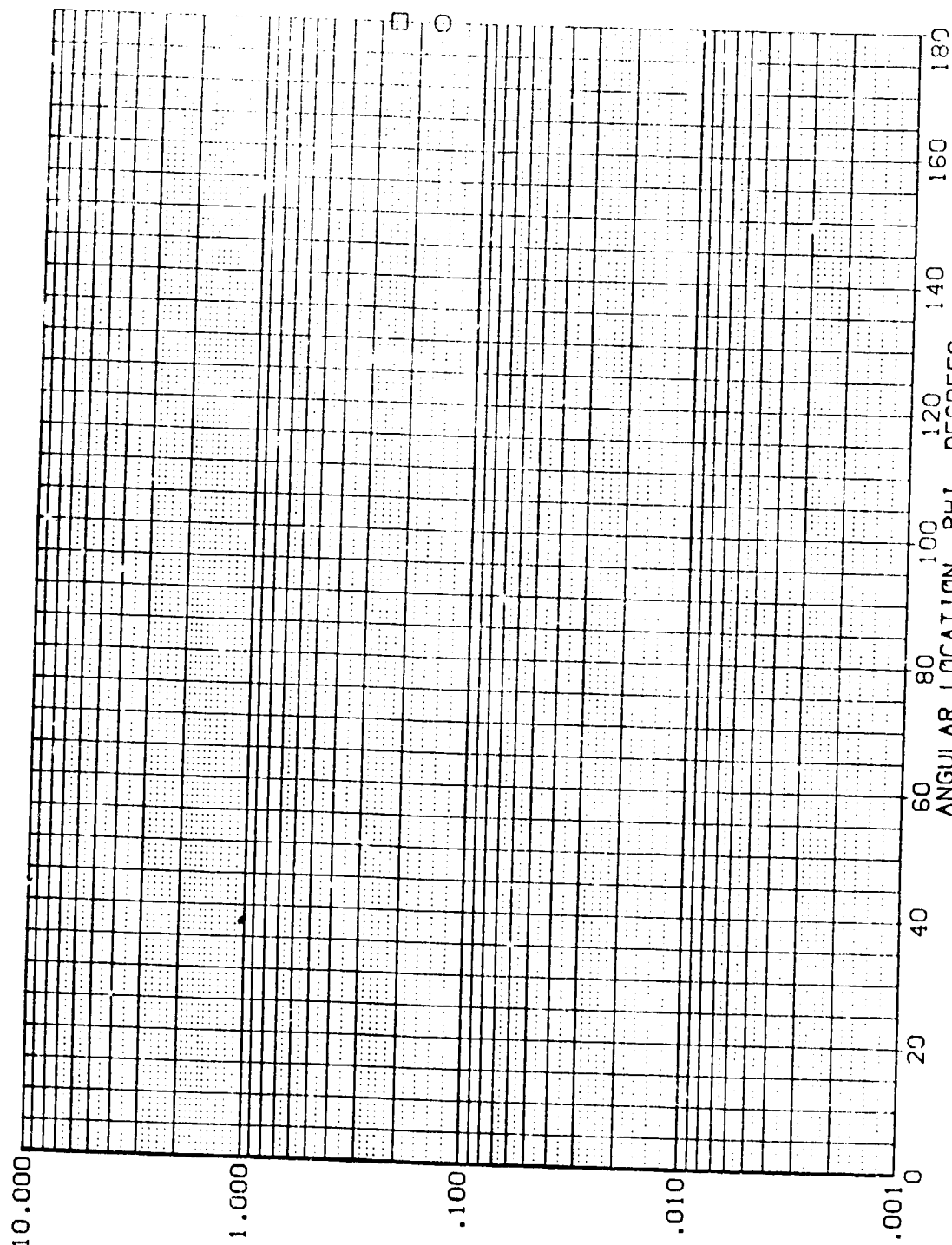


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS
 RN/L = 4.817 HAW/HT = 1.000 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT13) IHI8 TB X26
 (R0HT14) IHI8 TB X26

EXTERNAL TANK BETA ALPHA MACH X-HT
 EXTERNAL TANK .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

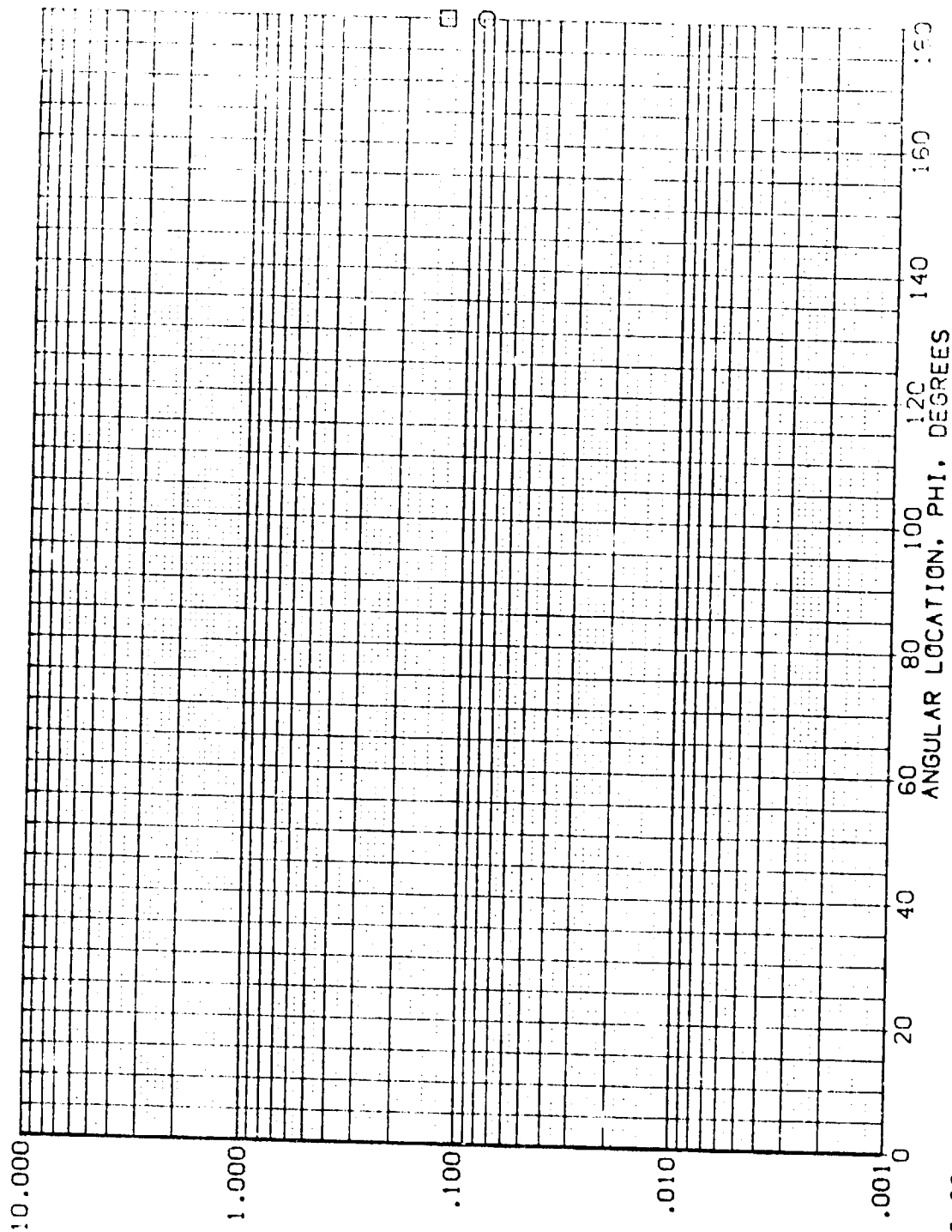


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .250

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT:3) 8 1H18 T8 X26
 (RMT:4) 8 1H18 T8 X26

EXTERNAL TANK BETA ALPHA MACH X-HT
 EXTERNAL TANK .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

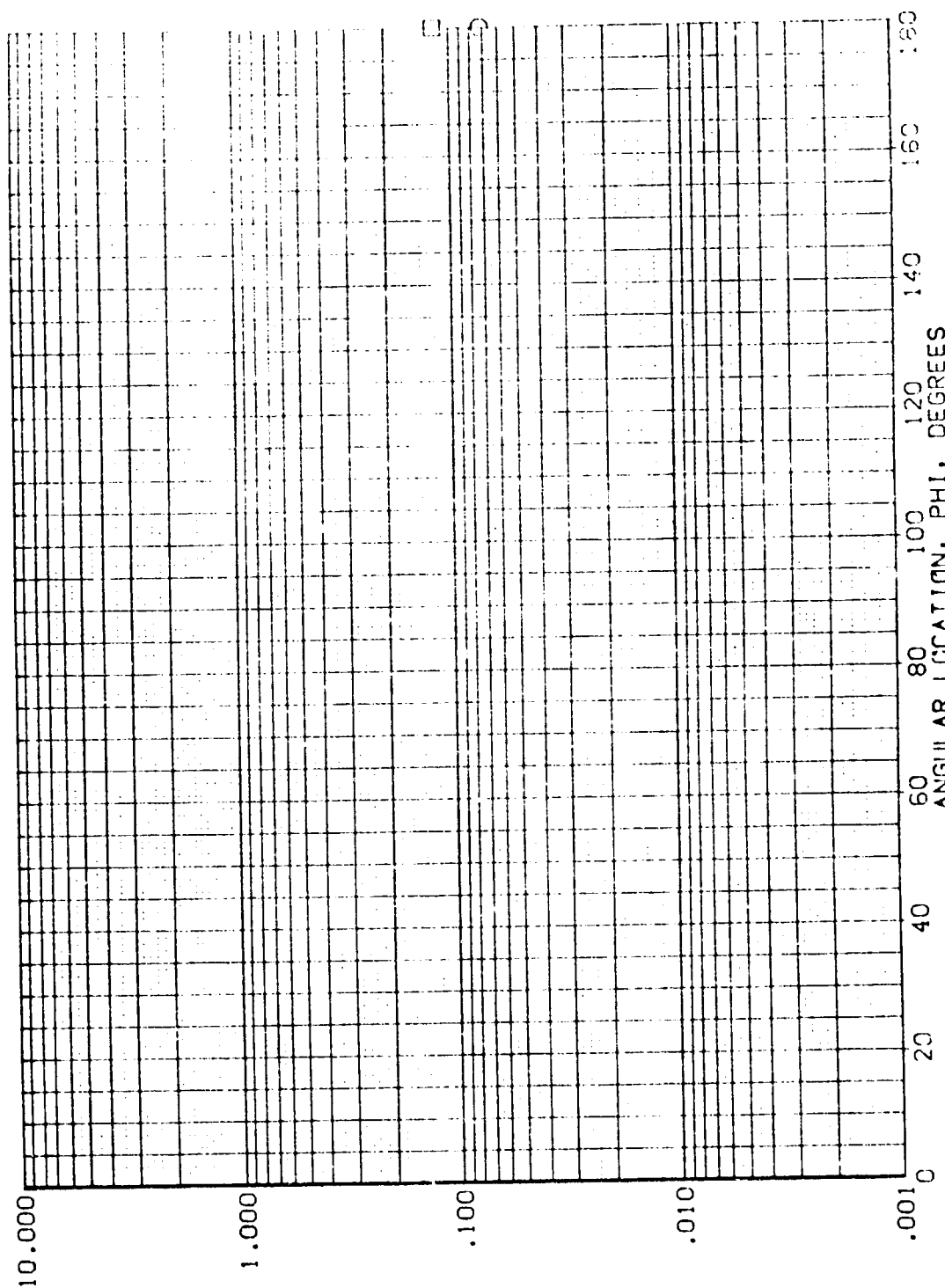


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .300

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R2M13) 0 M19 *8 426
 (R2M14) 0 M18 *8 425

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH X-MY
 .000 .000 5.000 1231
 .000 -5.000 6.000 1231

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

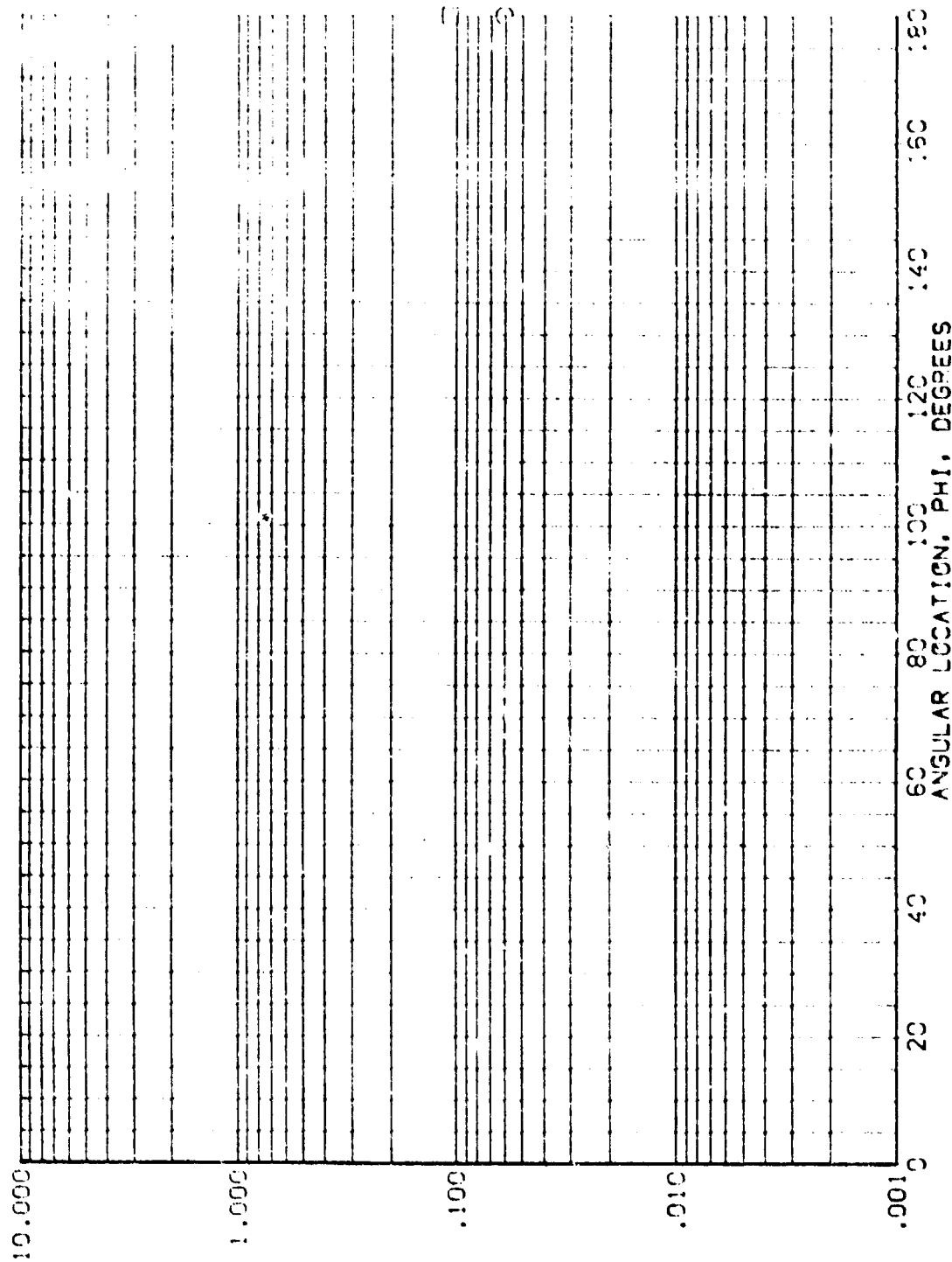


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 H/W/HTE = 1.000 X/L = .350

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT:13) [M18 *8 X26]
 (RMT:14) [M18 *8 X26]

BETA ALPHA MACH X-HY
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

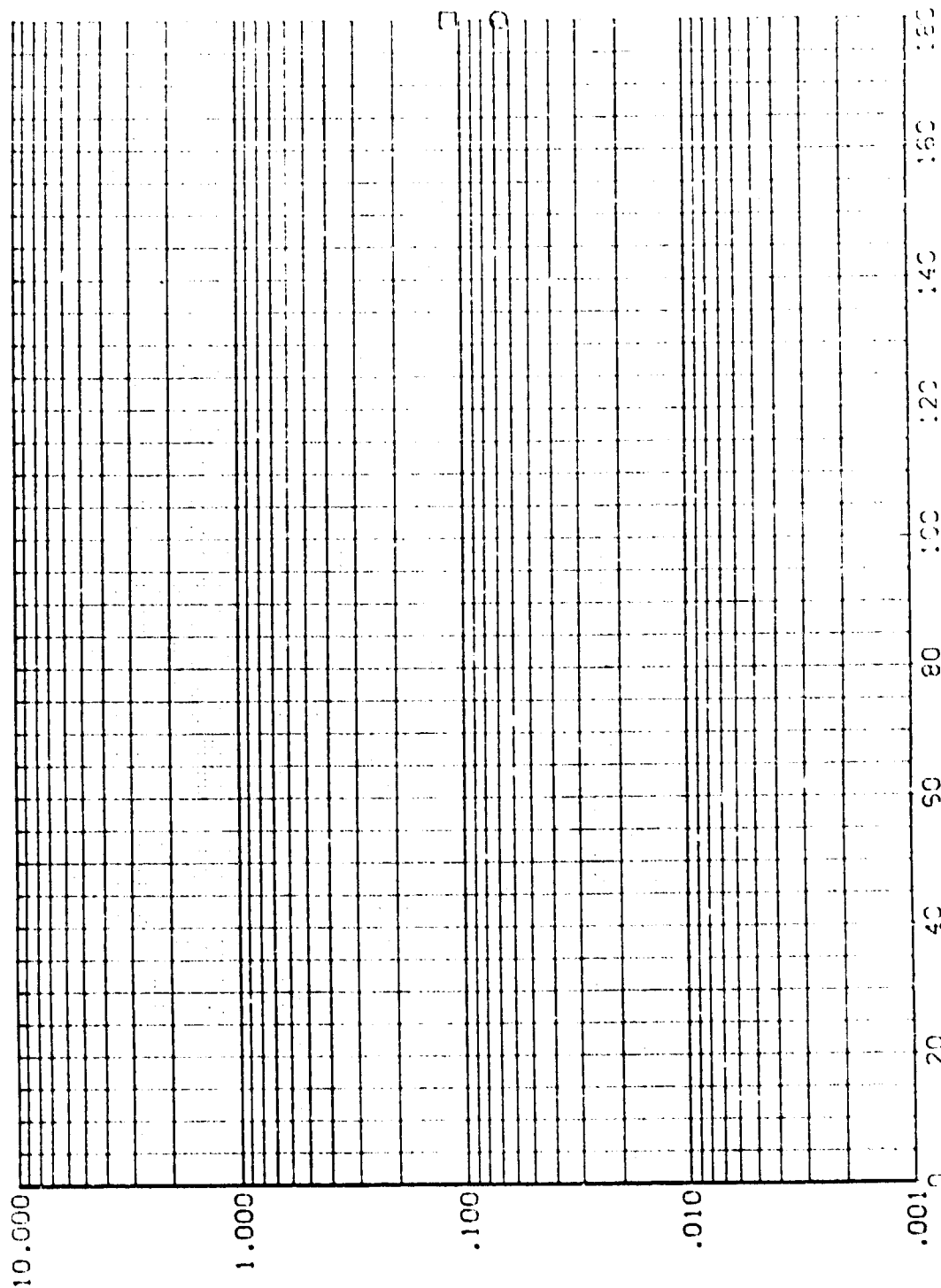


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

$RN/L = 4.817$ $-AX/HTE = 1.000$ $X/L = .375$

DATA SET SYMBOL: 1418
 CONFIGURATION DESCRIPTION: TB 426
 EXTERNAL TANK: 1418 TB 426

BETA: 1.000
 ALPHA: 1.000
 WASH: 1.000
 X/L: 1.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS - H/HREF

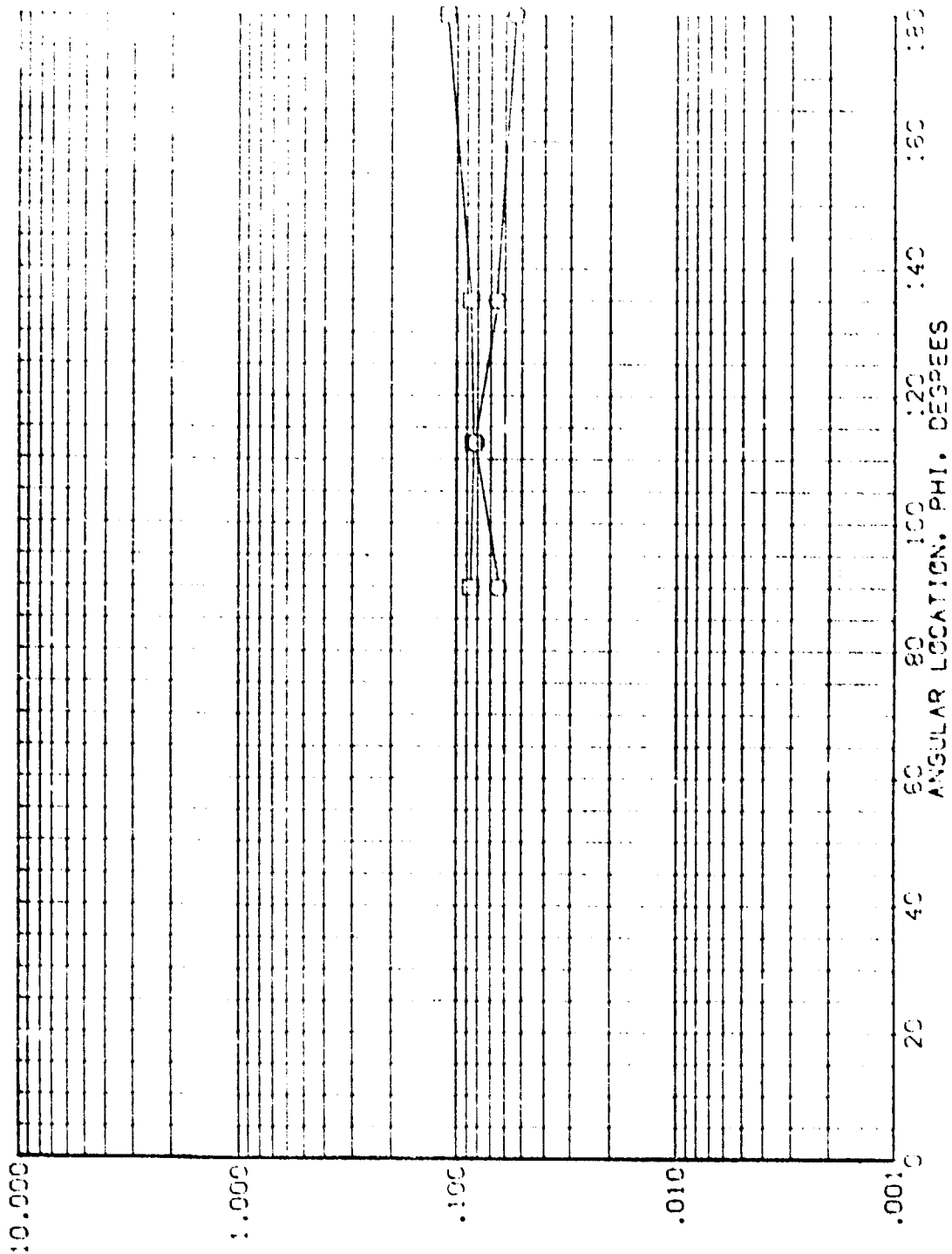


FIG 20 ST ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 $\Delta T/HREF$ = 1.000 X/L = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT13) I118 T8 X26
 (R0MT14) I118 T8 X26

EXTERNAL TANK
 EXTERNAL TANK
 BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

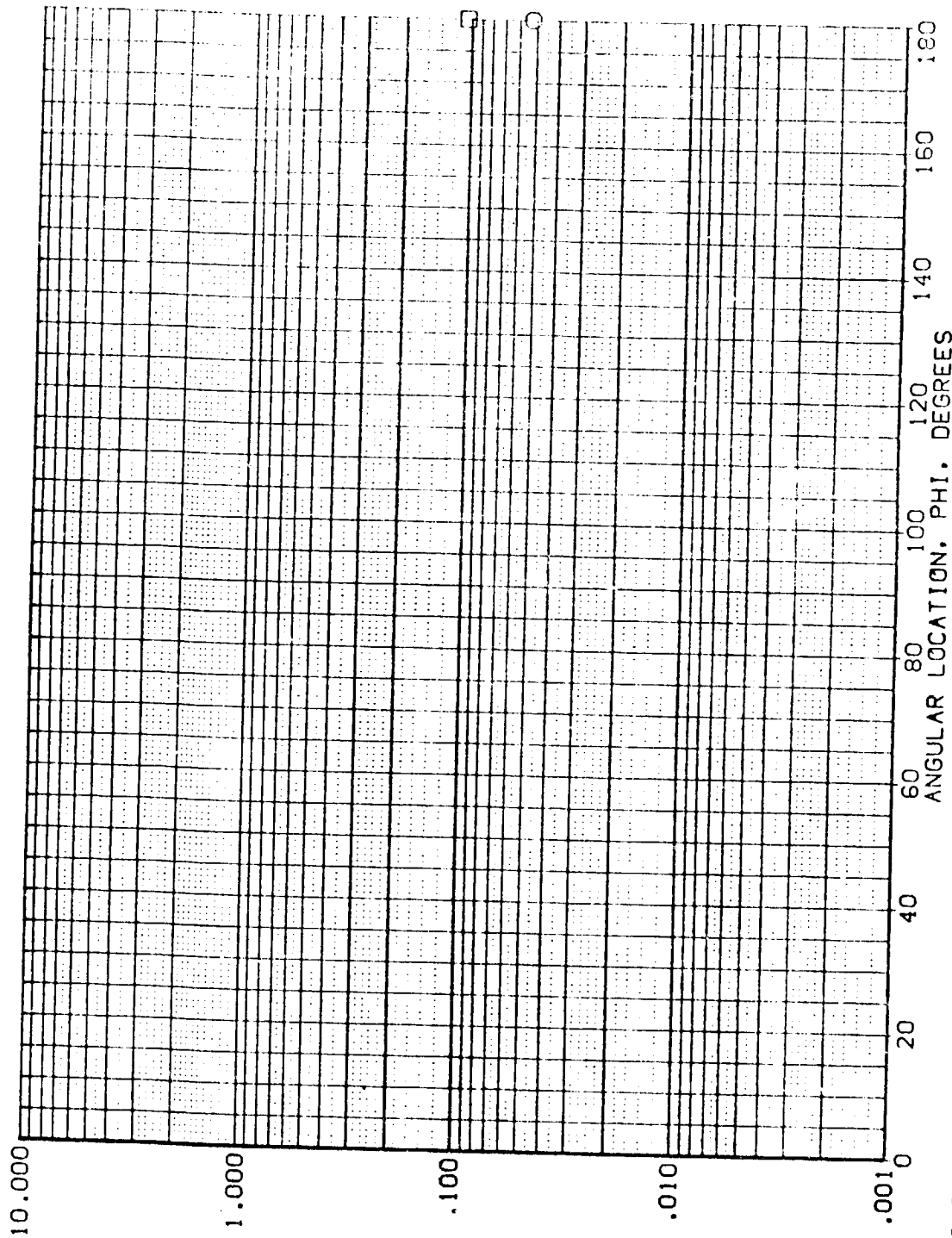


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

$RN/L = 4.817$ $HAW/HT = 1.000$ $X/L = .425$

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL

(R0MT13)
(R0MT14)

TH18 TB X26
TH18 TB X26

CONFIGURATION DESCRIPTION

EXTERNAL TANK
EXTERNAL TANK

BETA

.000
.000

ALPHA

.000
-5.000

MACH

5.000
5.000

X-HT

.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

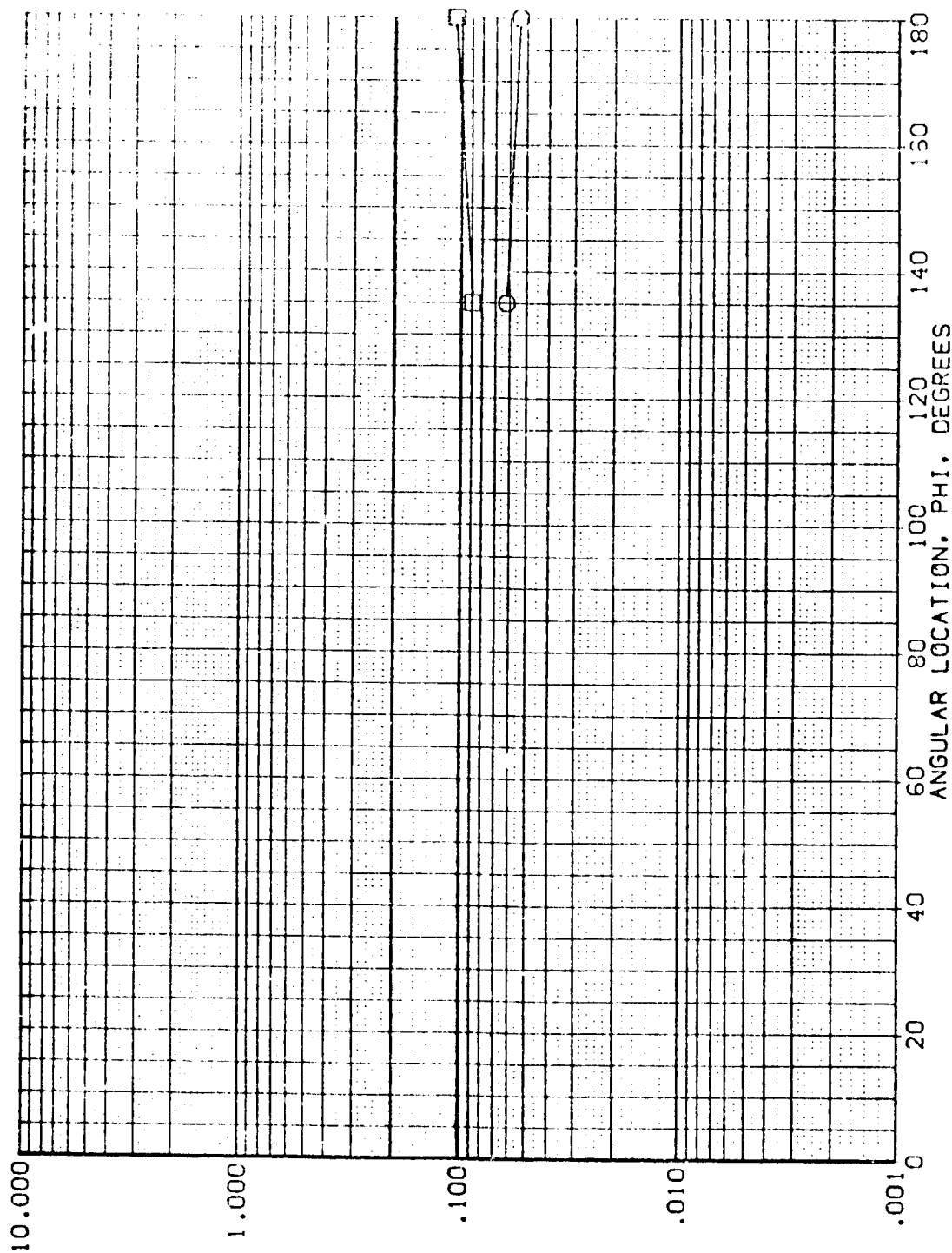


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .450

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQHT13) IH18 TB X26
 (RQHT14) IH18 TB X26

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

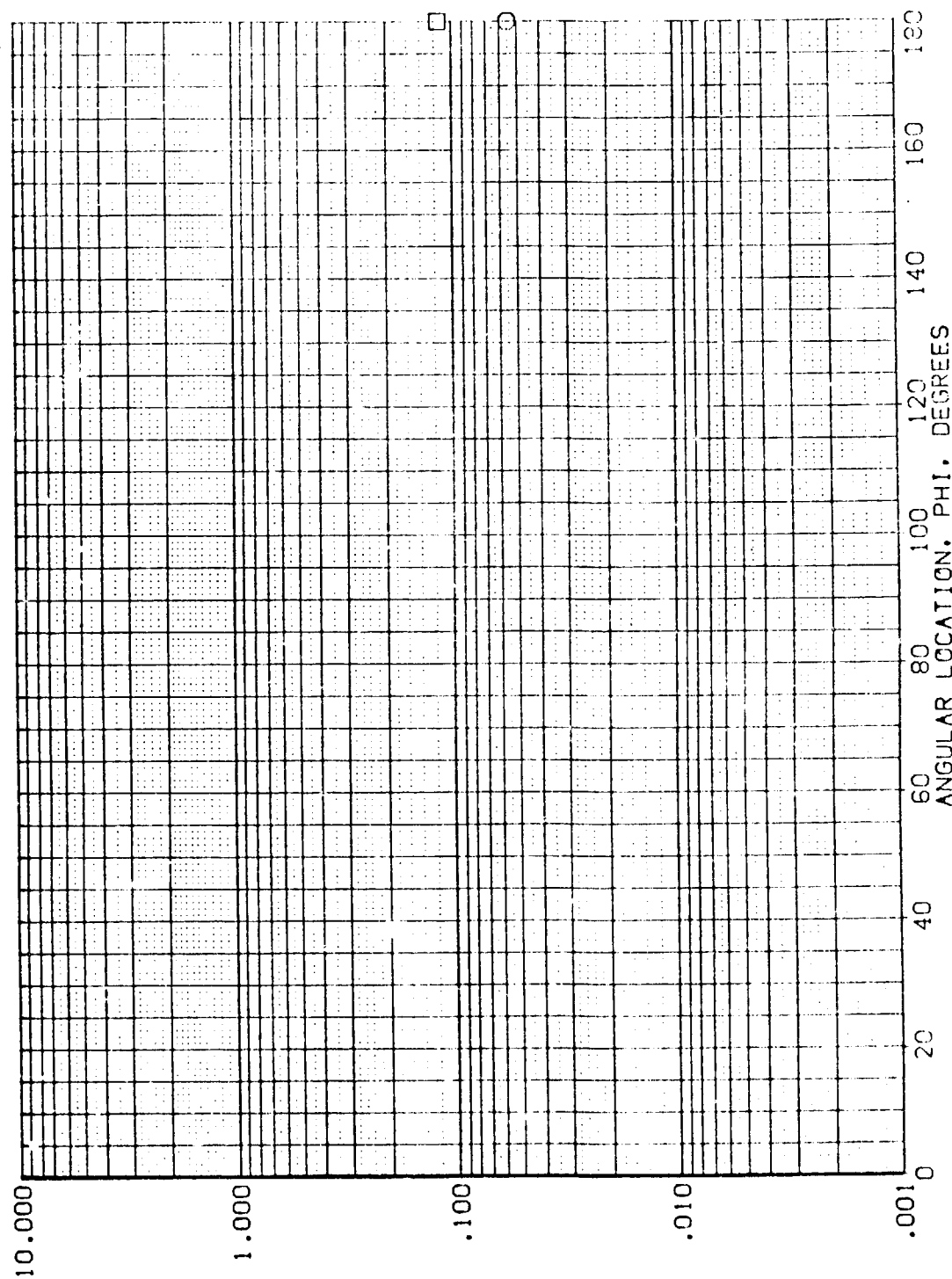


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .475

DATA SET SYMBOL
(R0HT13)
(R0HT14)

CONFIGURATION DESCRIPTION
H19 T8 X26
H18 T8 X26

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
-5.000

ALPHA
.000
-5.000

MACH
6.000
6.000

X-HT
.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

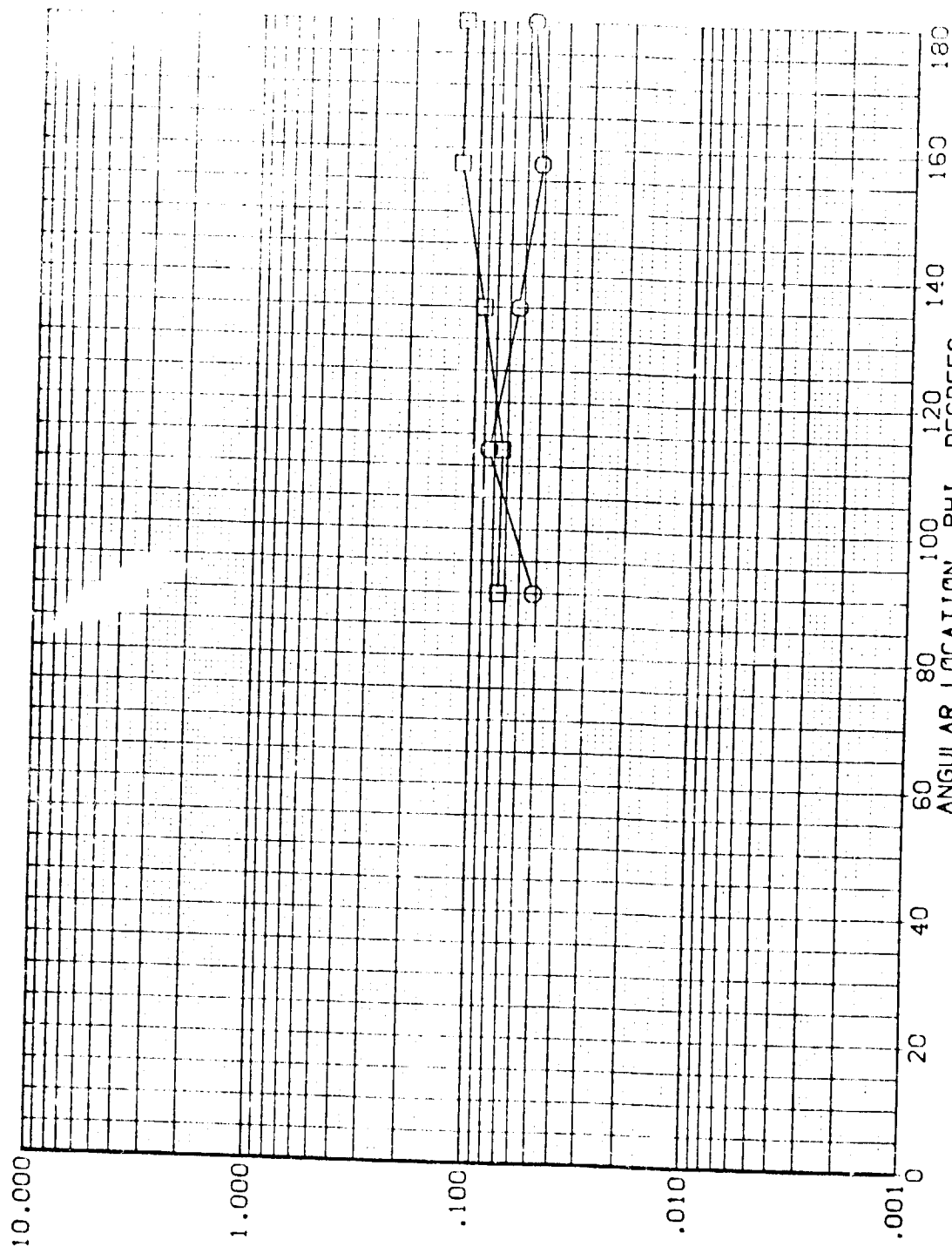


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

$RN/L = 4.817$ $HAW/HT = 1.000$ $X/L = .500$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (PMT13) 18 X26
 (PMT14) 18 X26

EXTERNAL TANK BETA ALPHA MACH X-HT
 EXTERNAL TANK .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

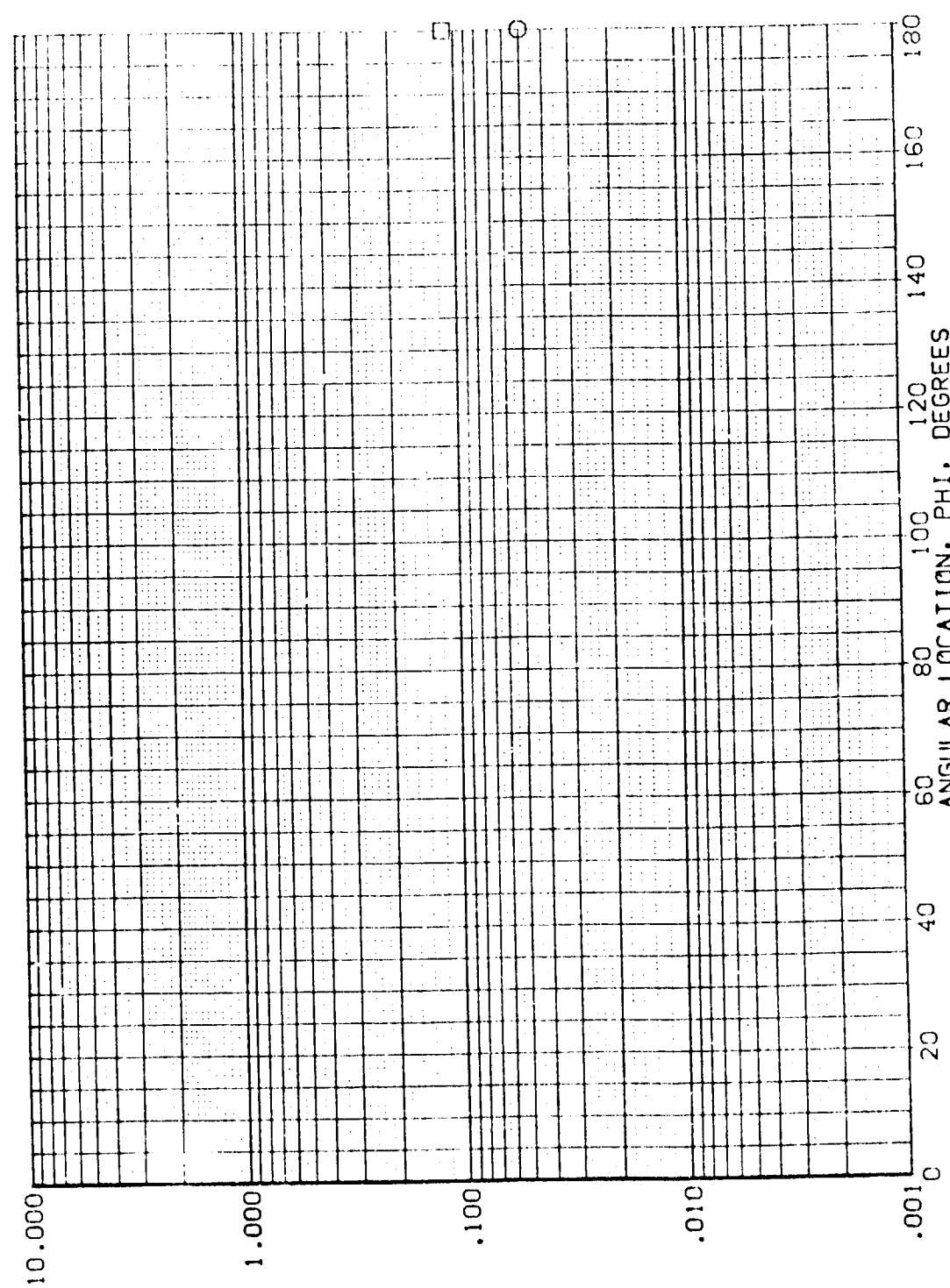


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .525

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT13) 1H18 18 X26
 (RQMT14) 1H18 18 X26

EXTERNAL TANK
 EXTERNAL TANK

BETA
 .000
 .000

ALPHA
 .000
 -5.000

MACH
 6.000
 6.000

X-HT
 .031
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

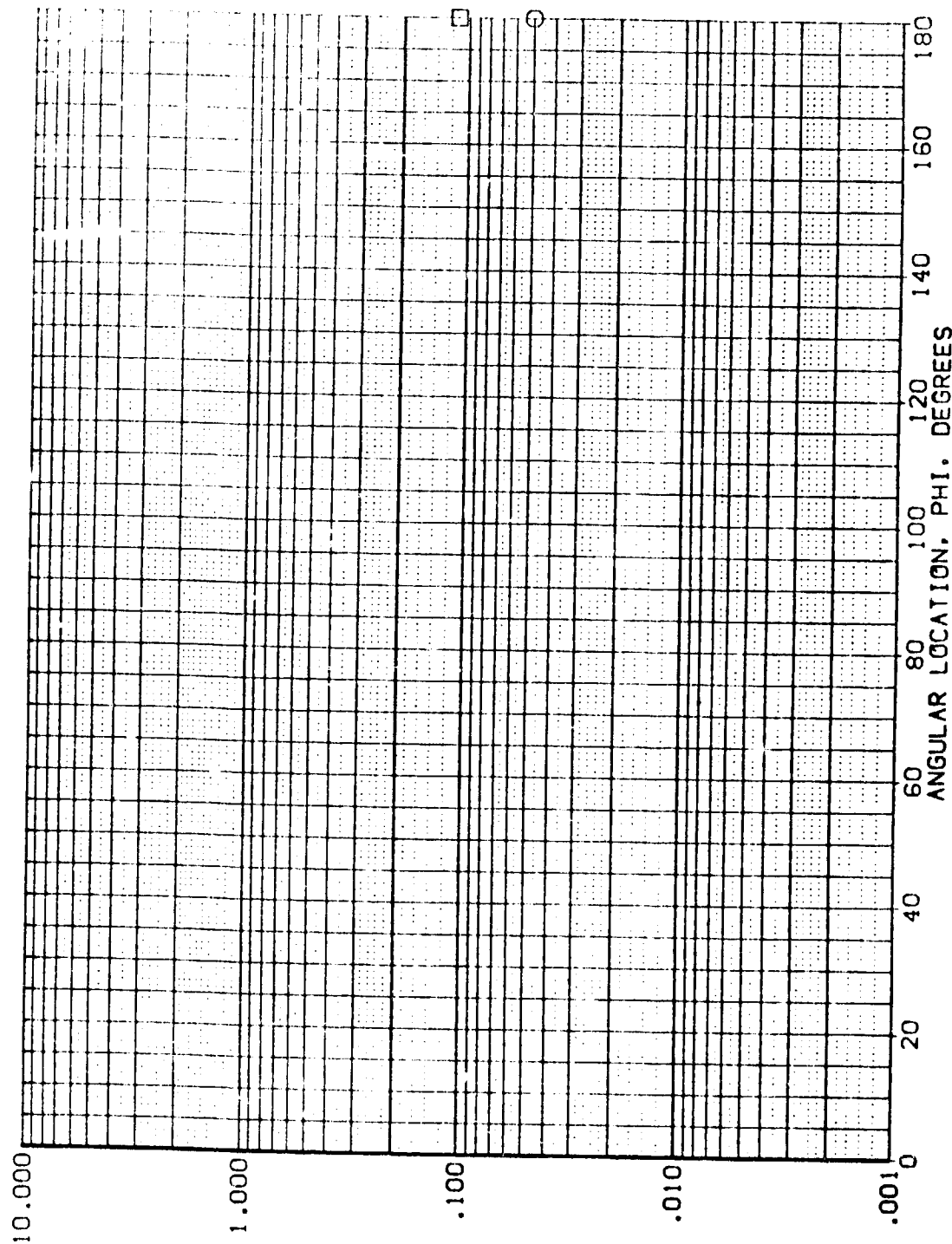


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = 1.000$ $X/L = .550$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT13) IHI8 T8 X26
 (R0HT14) IHI8 T8 X26

EXTERNAL TANK EXTERNAL TANK
 BETA .000 .000 .031
 ALPHA .000 -5.000 .031
 MACH 6.000 6.000
 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

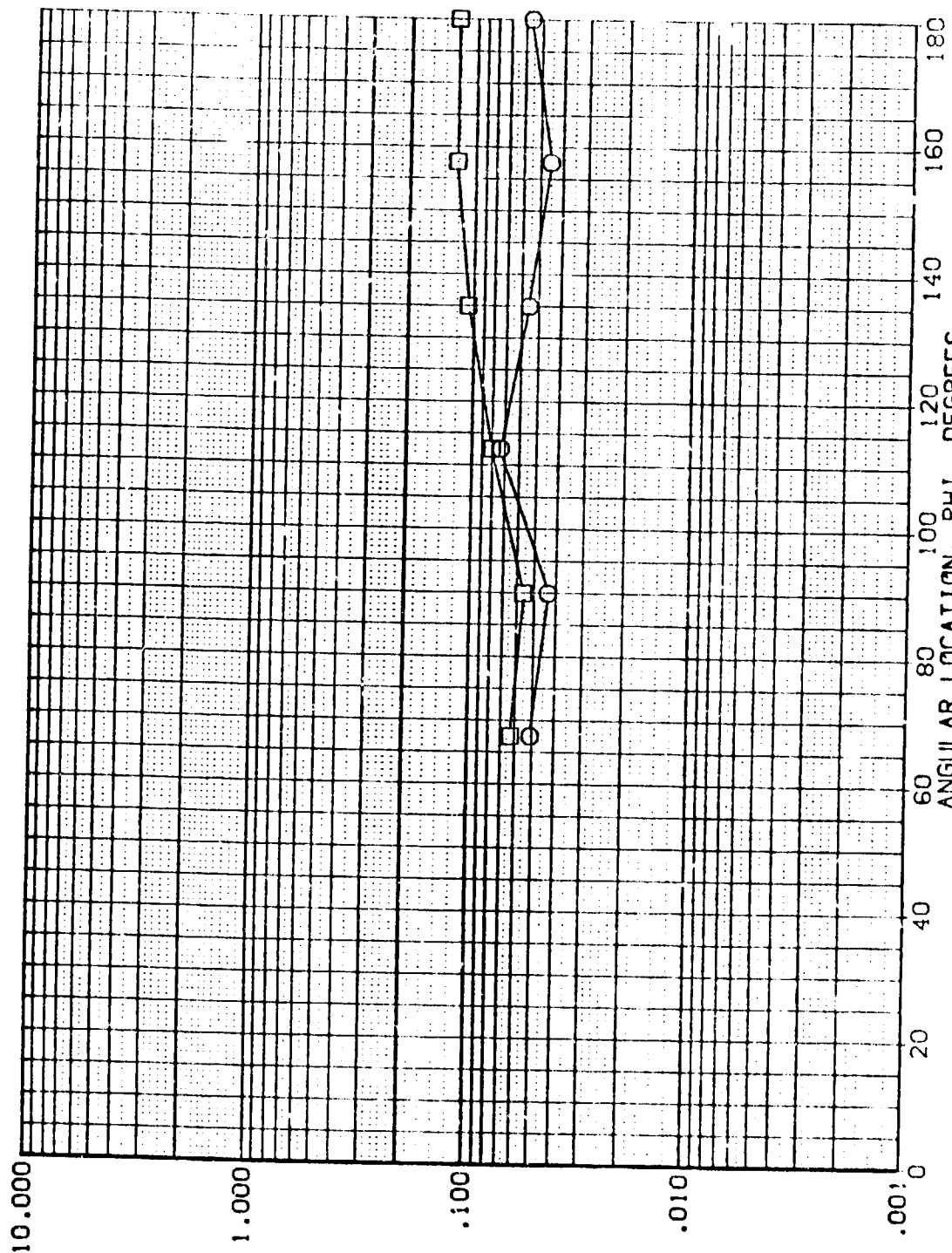


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

$RN/L = 4.817$ $h_{AW}/h_T = 1.000$ $X/L = .600$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RONT13) IM18 TB X26
 (RONT14) IM18 TB X26

EXTERNAL TANK
 EXTERNAL TANK

BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

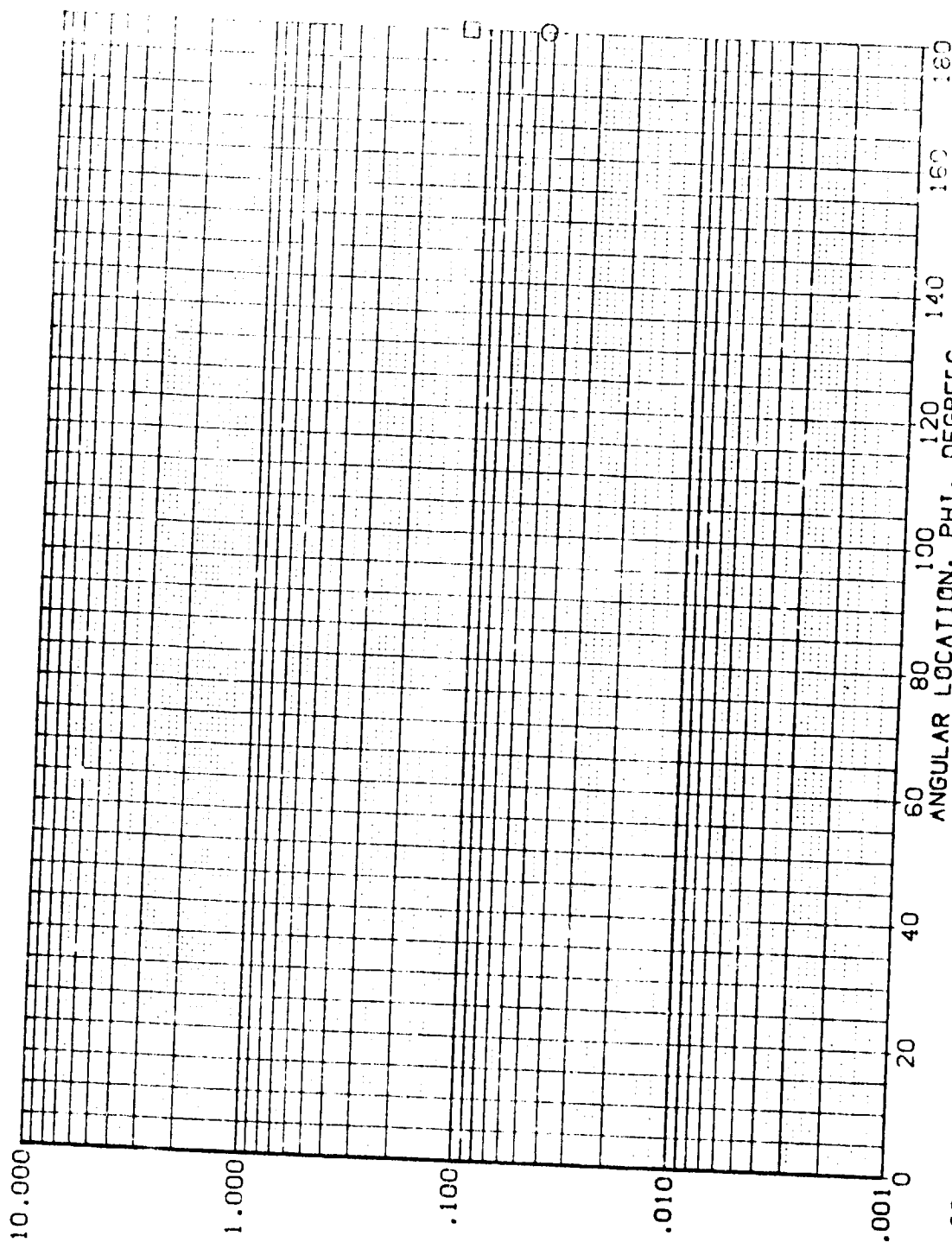


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS
 $RN/L = 4.817$ $HAW/HT = 1.000$ $X/L = .650$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RIGHT) 3) 1H18 T8 X26
 (RIGHT) 4) 1H18 T8 X26

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

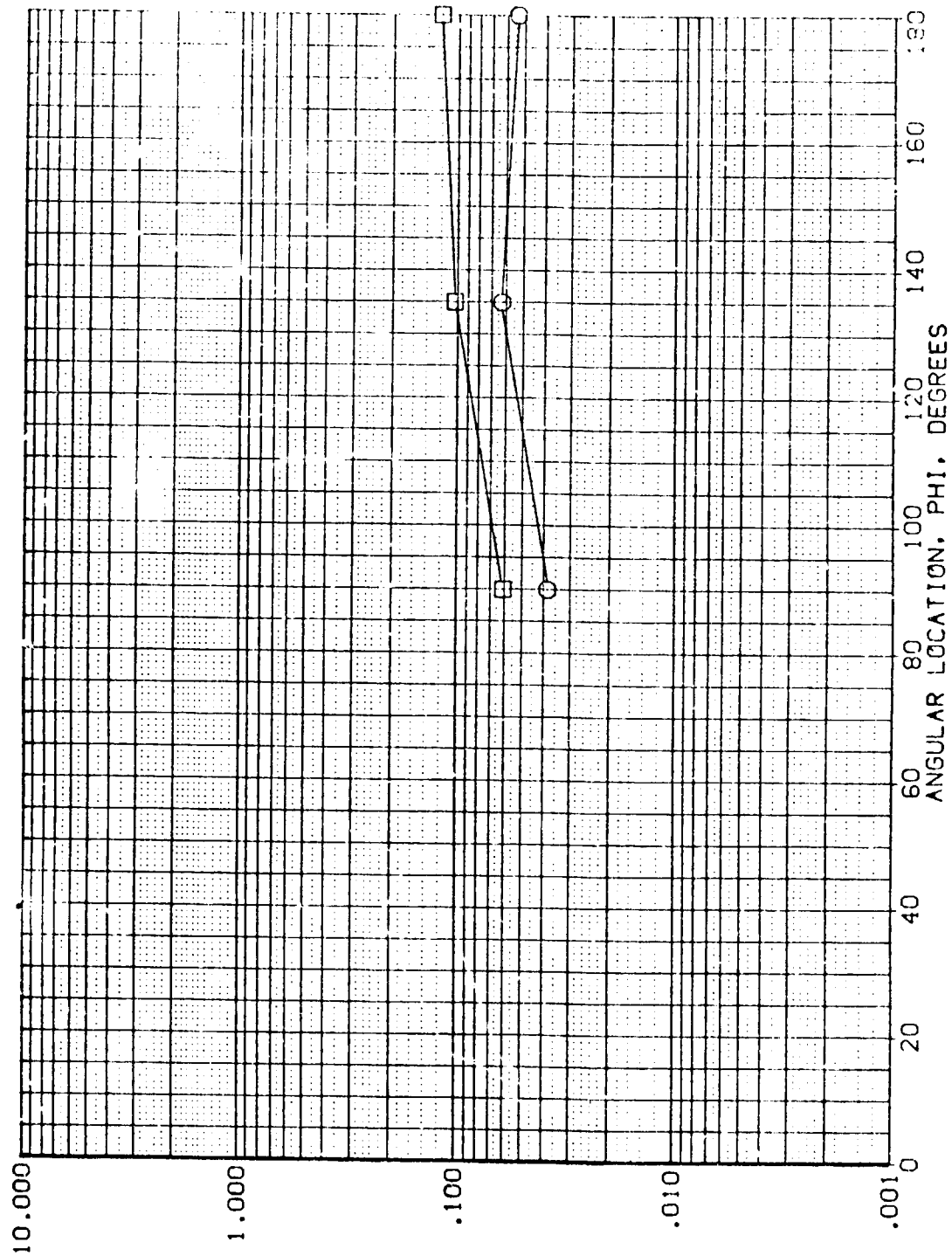


FIG 20 ET ALONE HEATING RATE VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.817 $h_{AW}/h_T = 1.000$ $X/L = .700$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (ROW:3) I418 TB X26
 (ROW:4) I418 TB X26

BETA ALPHA MACH K-M1
 .000 .000 5.000 1.01
 .000 -5.000 5.000 1.01

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

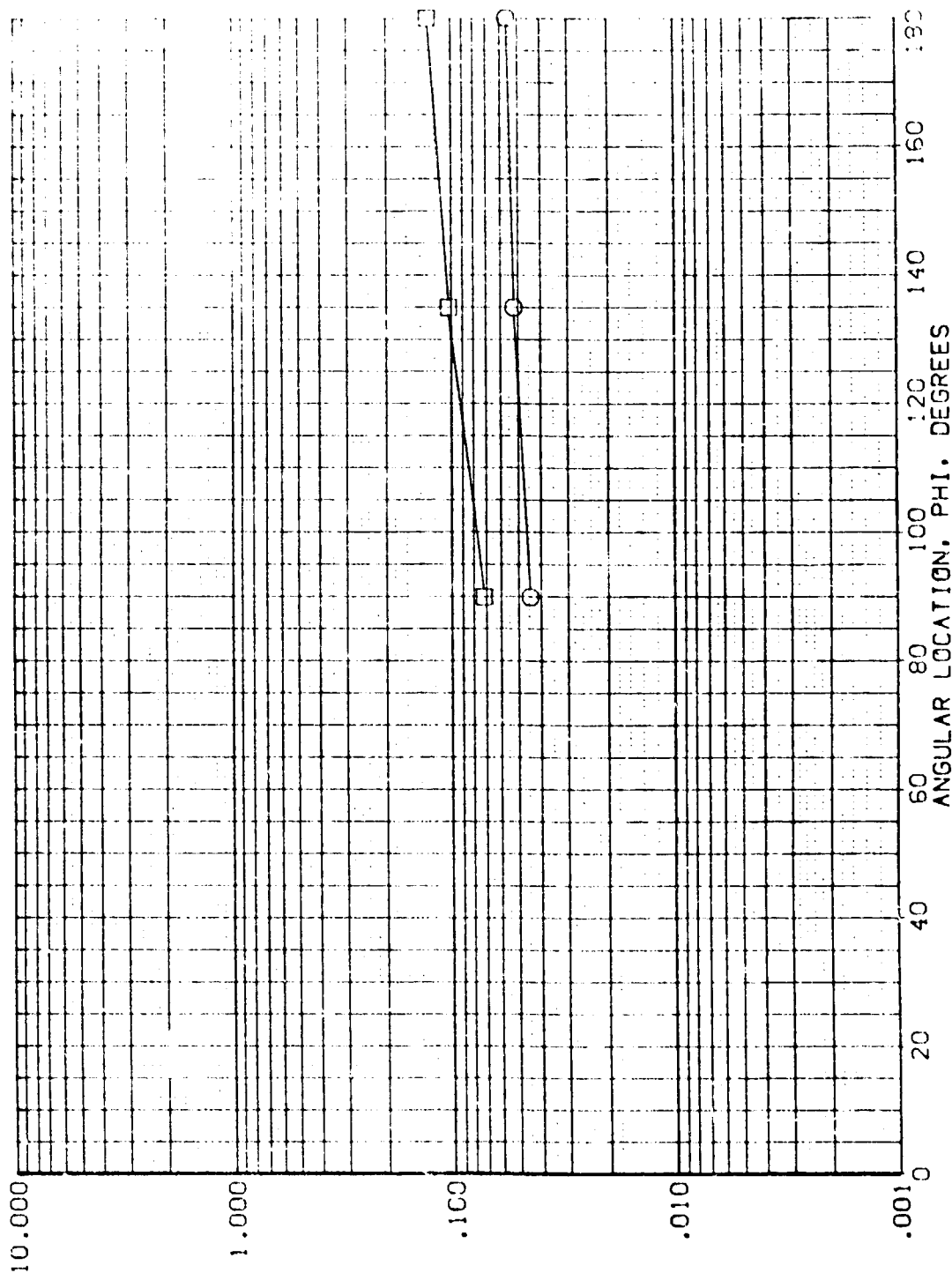


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .800

DATA SET SYMBOL (R0M113) (R0M114) B

CONFIGURATION DESCRIPTION IM18 TB X26 IM18 TB X26

EXTERNAL TANK EXTERNAL TANK BETA ALPHA MACH X-HT .000 .000 -5.000 6.000 .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

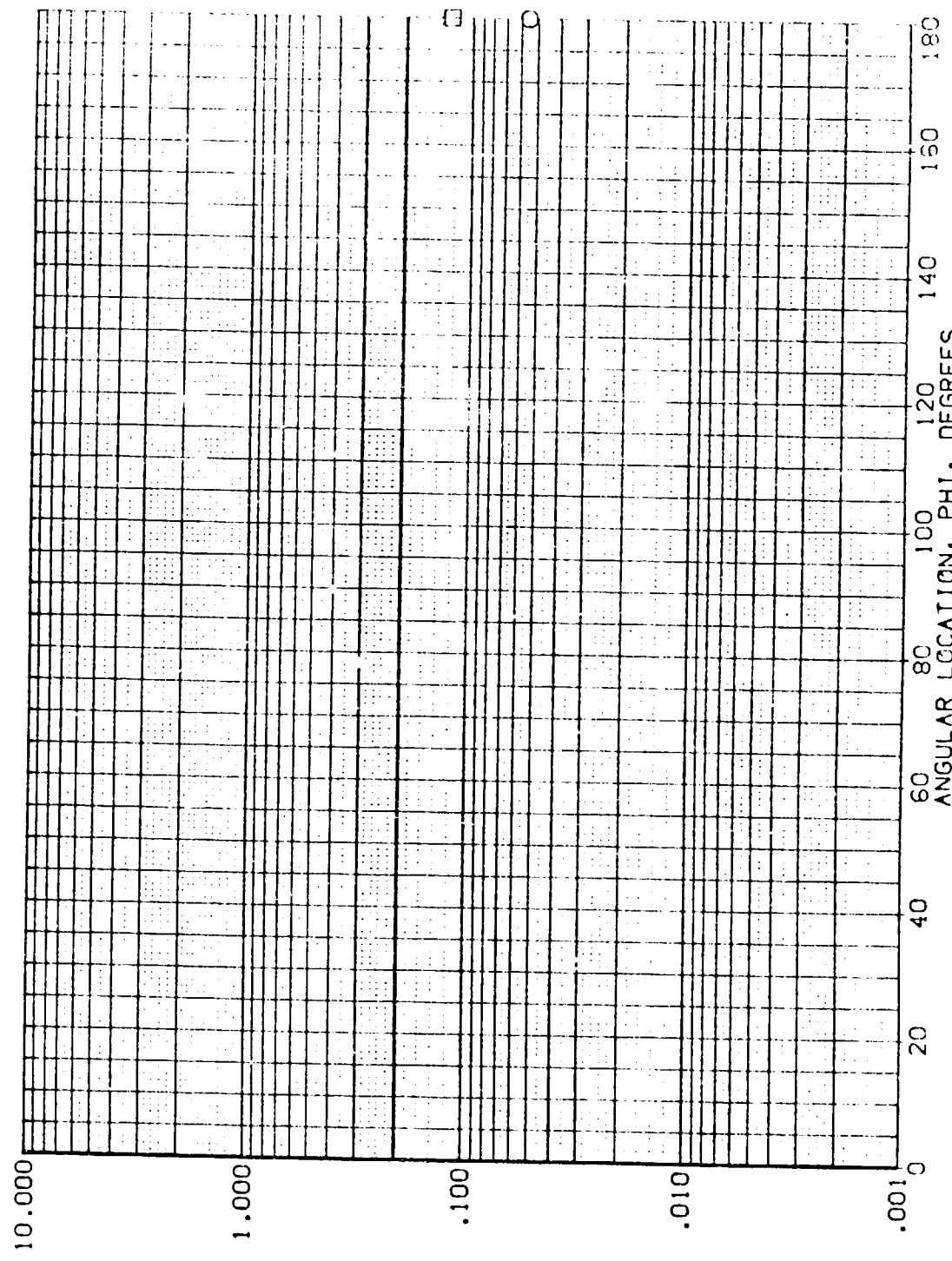


FIG 20 ET ALONE HEATING RATE VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.817 HAW/HT = 1.000 X/L = .900

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

1418 B10CSD7W87M3F4V5 T8 EXTERNAL TANK (R0MT02)

PARAMETRIC VALUES
 ALPHA 0.000
 BETA 0.000
 DELTA 0.000

MAW/HT 0.850
 RN/L 4.807

SYMBOL X/L
 0.000
 0.010
 0.020
 0.050
 0.100
 0.150
 0.200
 0.250
 0.300
 0.350
 0.400
 0.450
 0.500
 0.550
 0.600
 0.650
 0.700
 0.750
 0.800
 0.850
 0.900
 0.950
 1.000
 1.050
 1.100
 1.150
 1.200
 1.250
 1.300
 1.350
 1.400
 1.450
 1.500
 1.550
 1.600
 1.650
 1.700
 1.750
 1.800
 1.850
 1.900
 1.950
 2.000
 2.050
 2.100
 2.150
 2.200
 2.250
 2.300
 2.350
 2.400
 2.450
 2.500
 2.550
 2.600
 2.650
 2.700
 2.750
 2.800
 2.850
 2.900
 2.950
 3.000
 3.050
 3.100
 3.150
 3.200
 3.250
 3.300
 3.350
 3.400
 3.450
 3.500
 3.550
 3.600
 3.650
 3.700
 3.750
 3.800
 3.850
 3.900
 3.950
 4.000
 4.050
 4.100
 4.150
 4.200
 4.250
 4.300
 4.350
 4.400
 4.450
 4.500
 4.550
 4.600
 4.650
 4.700
 4.750
 4.800
 4.850
 4.900
 4.950
 5.000
 5.050
 5.100
 5.150
 5.200
 5.250
 5.300
 5.350
 5.400
 5.450
 5.500
 5.550
 5.600
 5.650
 5.700
 5.750
 5.800
 5.850
 5.900
 5.950
 6.000
 6.050
 6.100
 6.150
 6.200
 6.250
 6.300
 6.350
 6.400
 6.450
 6.500
 6.550
 6.600
 6.650
 6.700
 6.750
 6.800
 6.850
 6.900
 6.950
 7.000
 7.050
 7.100
 7.150
 7.200
 7.250
 7.300
 7.350
 7.400
 7.450
 7.500
 7.550
 7.600
 7.650
 7.700
 7.750
 7.800
 7.850
 7.900
 7.950
 8.000
 8.050
 8.100
 8.150
 8.200
 8.250
 8.300
 8.350
 8.400
 8.450
 8.500
 8.550
 8.600
 8.650
 8.700
 8.750
 8.800
 8.850
 8.900
 8.950
 9.000
 9.050
 9.100
 9.150
 9.200
 9.250
 9.300
 9.350
 9.400
 9.450
 9.500
 9.550
 9.600
 9.650
 9.700
 9.750
 9.800
 9.850
 9.900
 9.950
 10.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

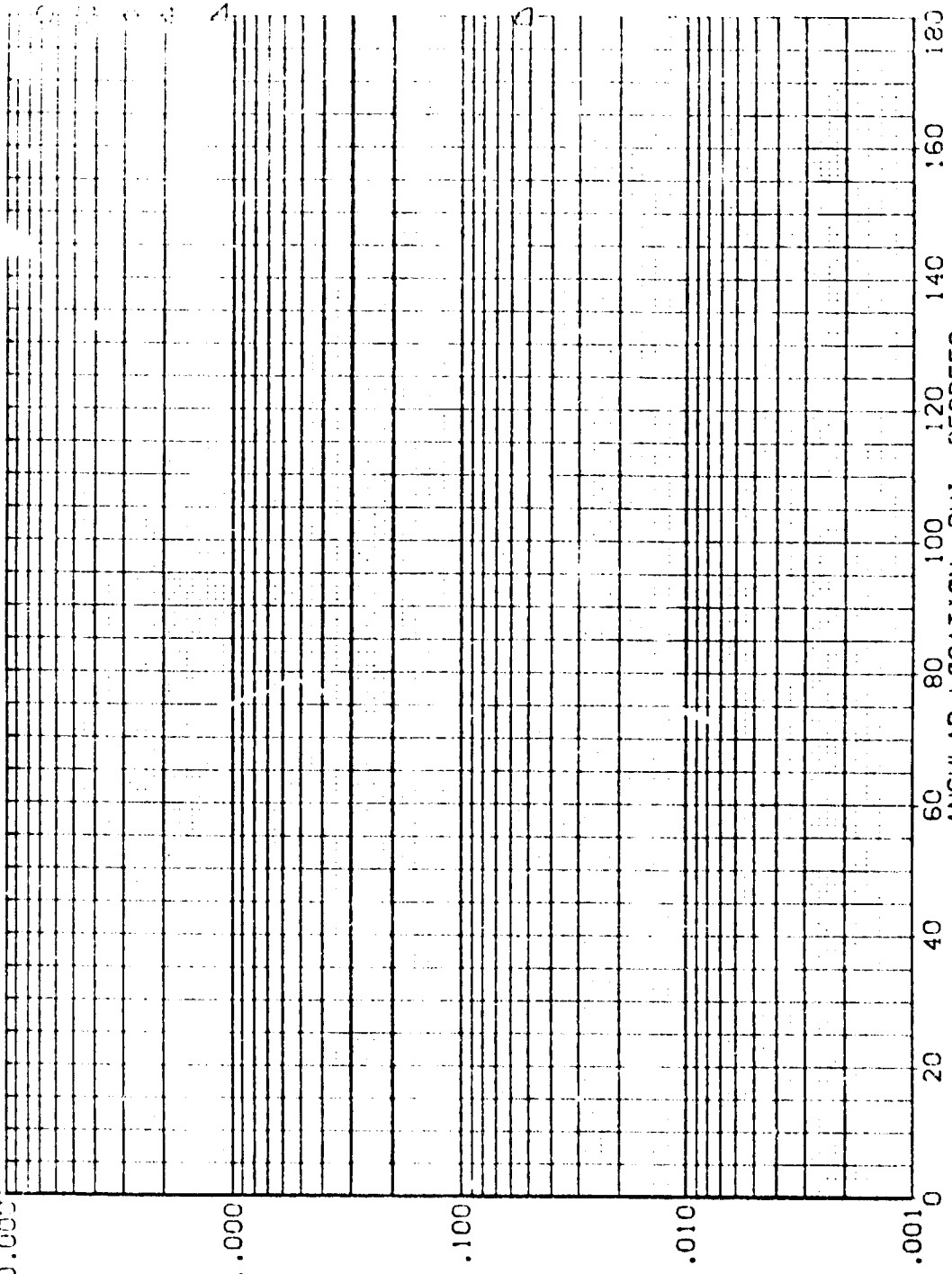


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

!H:8 B10C5D7W87M3F4V5 T8

EXTERNAL TANK

(RQMT02)

SYMBOL	X/L	HAW/HT	RN/L	PARAMETRIC VALUES		
				ALPHA	BETA	DELTA
□	.200	.850	4.807	6.000	.000	.000
◇	.250					.175
△	.300					
▽	.350					
▽	.375					

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

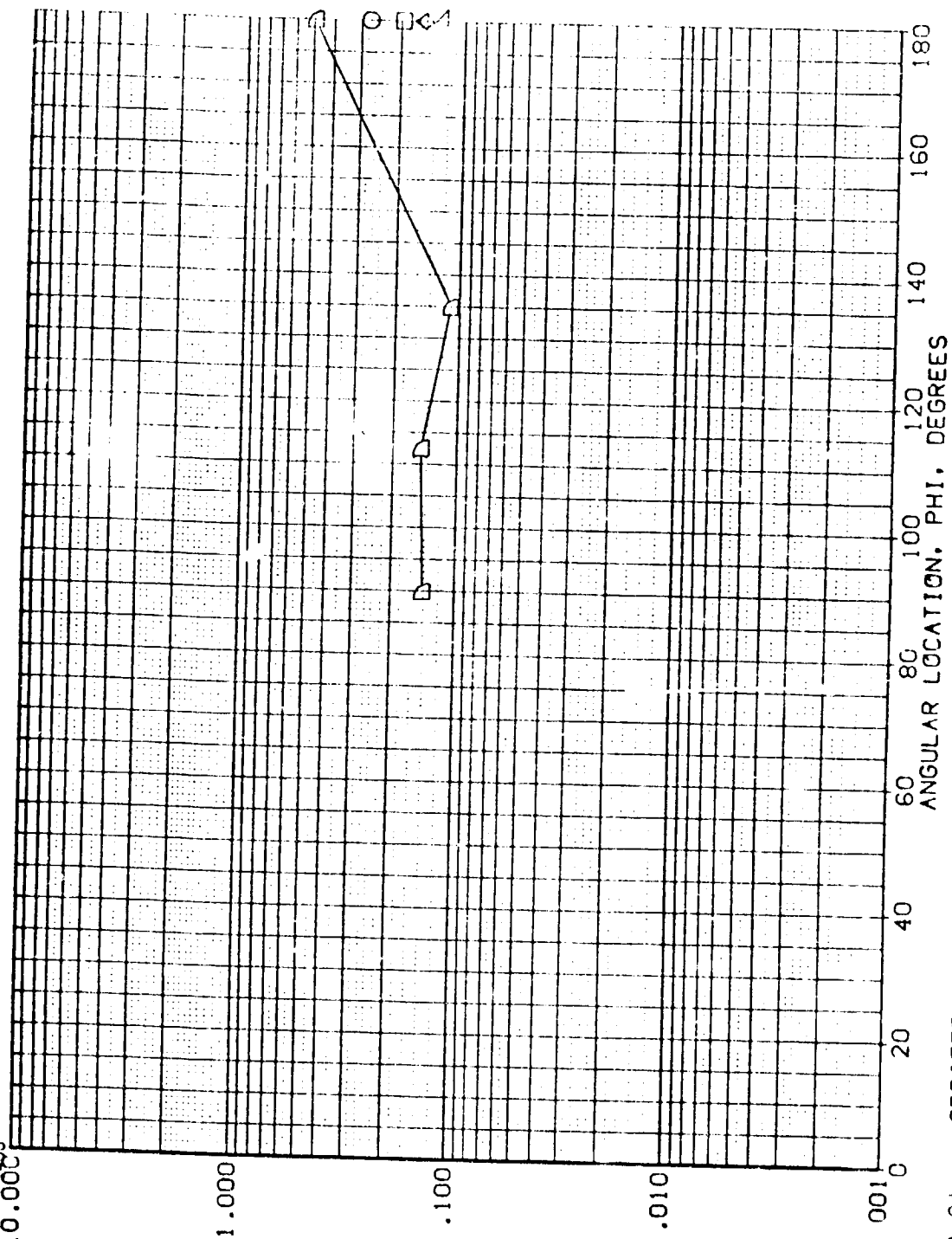


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

PHI8 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT02)

PARAMETRIC VALUES
ALPHA .000 BETA .00
MACH 6.000 DELTAN .075

SYMBOL X/L HAW/HT RN/L
□ .425
□ .450
□ .475
□ .500
□ .525

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

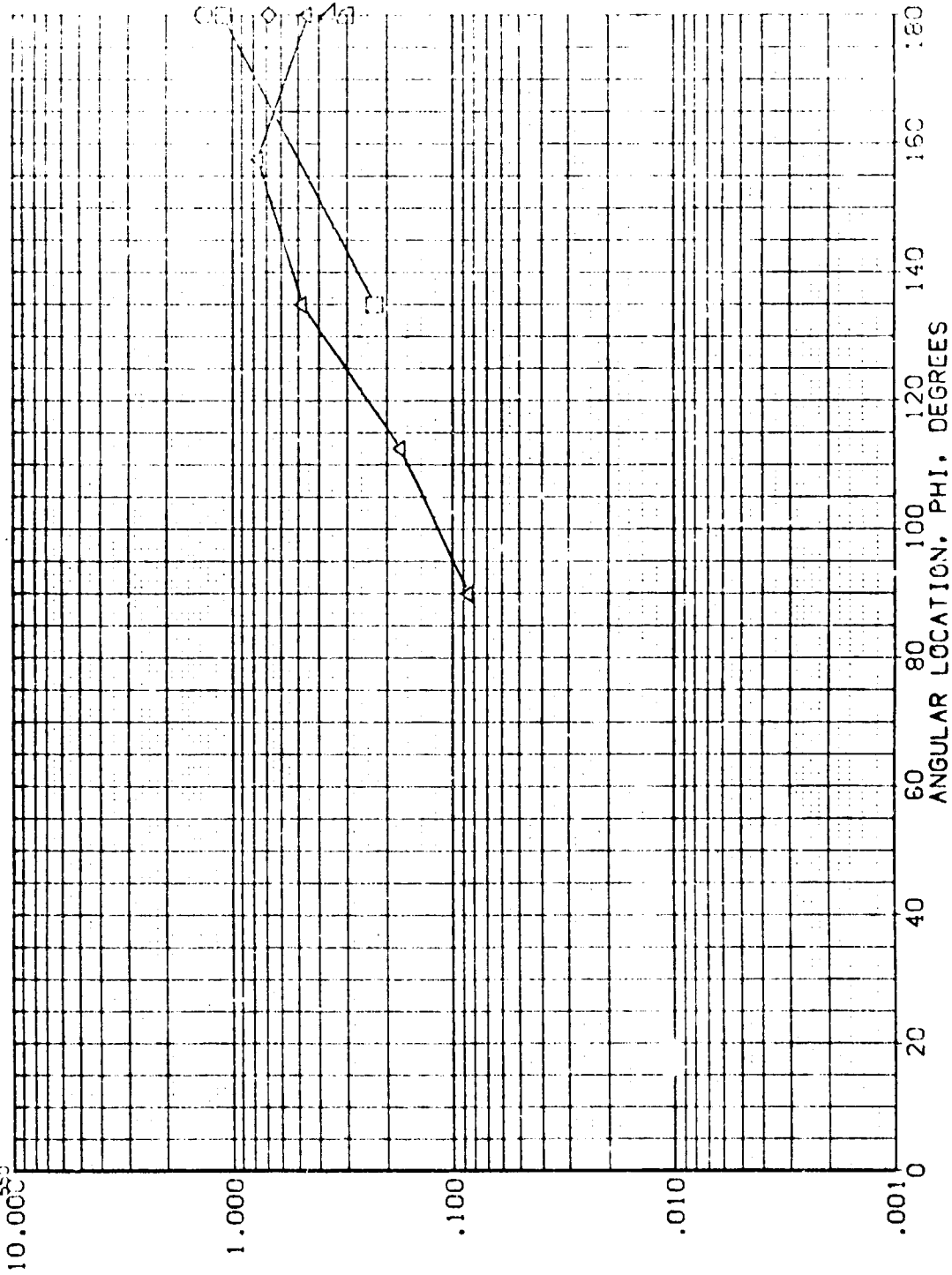


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C507W87M3F4V5 T8

EXTERNAL TANK

(RQMT02)

PARAMETRIC VALUES
ALPHA
MACH .000
BETA 6.000
DELTAH .000
DELTAH .000

SYMBOL X/L HAW/HT RN/L
.600
.650
.700
.800
.900

▽◇□○

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

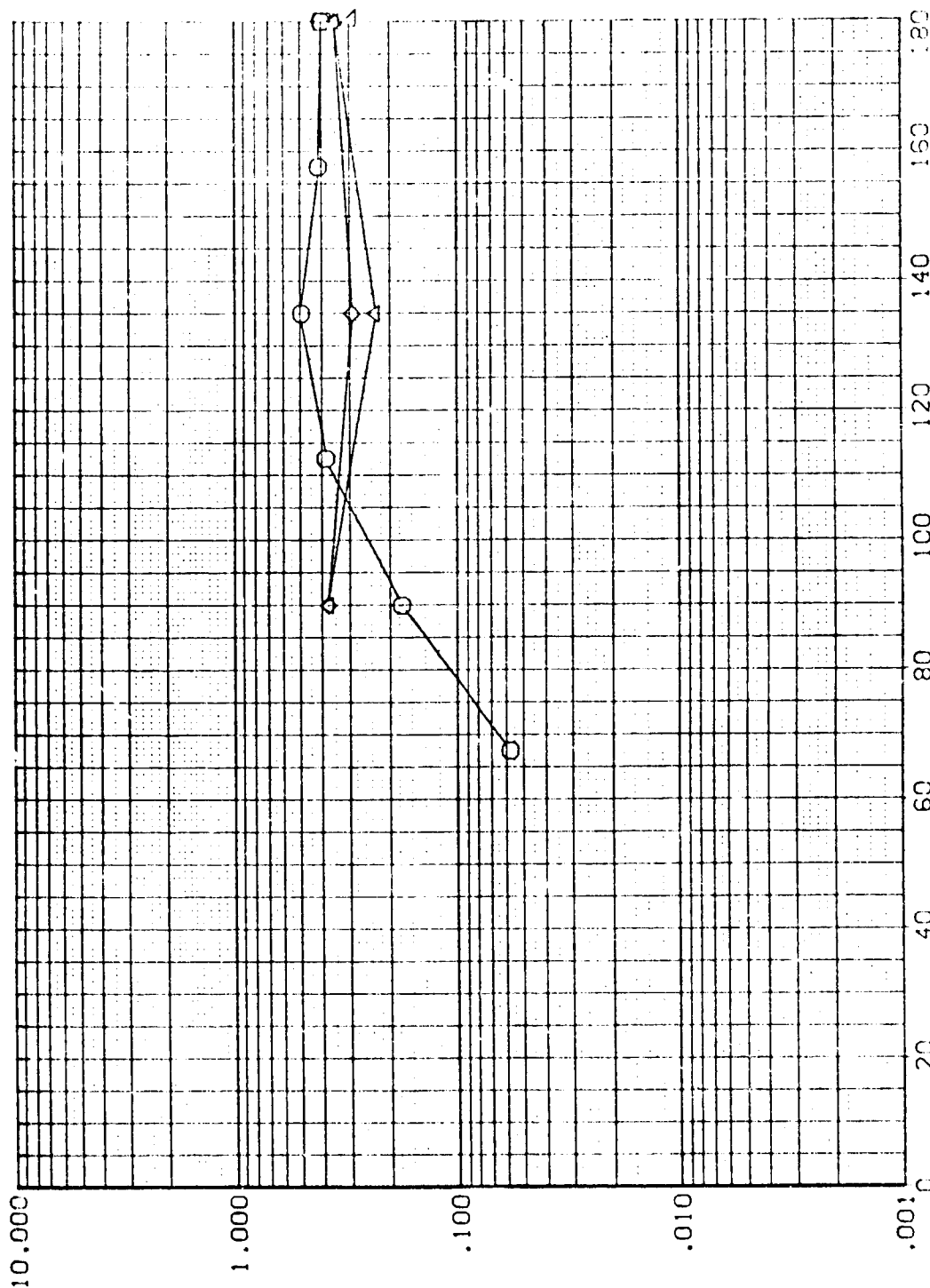


FIG 21 COMPUTER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

EXTERNAL TANK (R0MT02)

1418 B10C5D7W87M3F4V5 T8

SYMBOL

X/L

HAU/HT

RN/L 4.807

PARAMETRIC VALUES

ALPHA
MACH

BETA
DELTA

.000
.010
.020
.060
.100
1.000
10.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

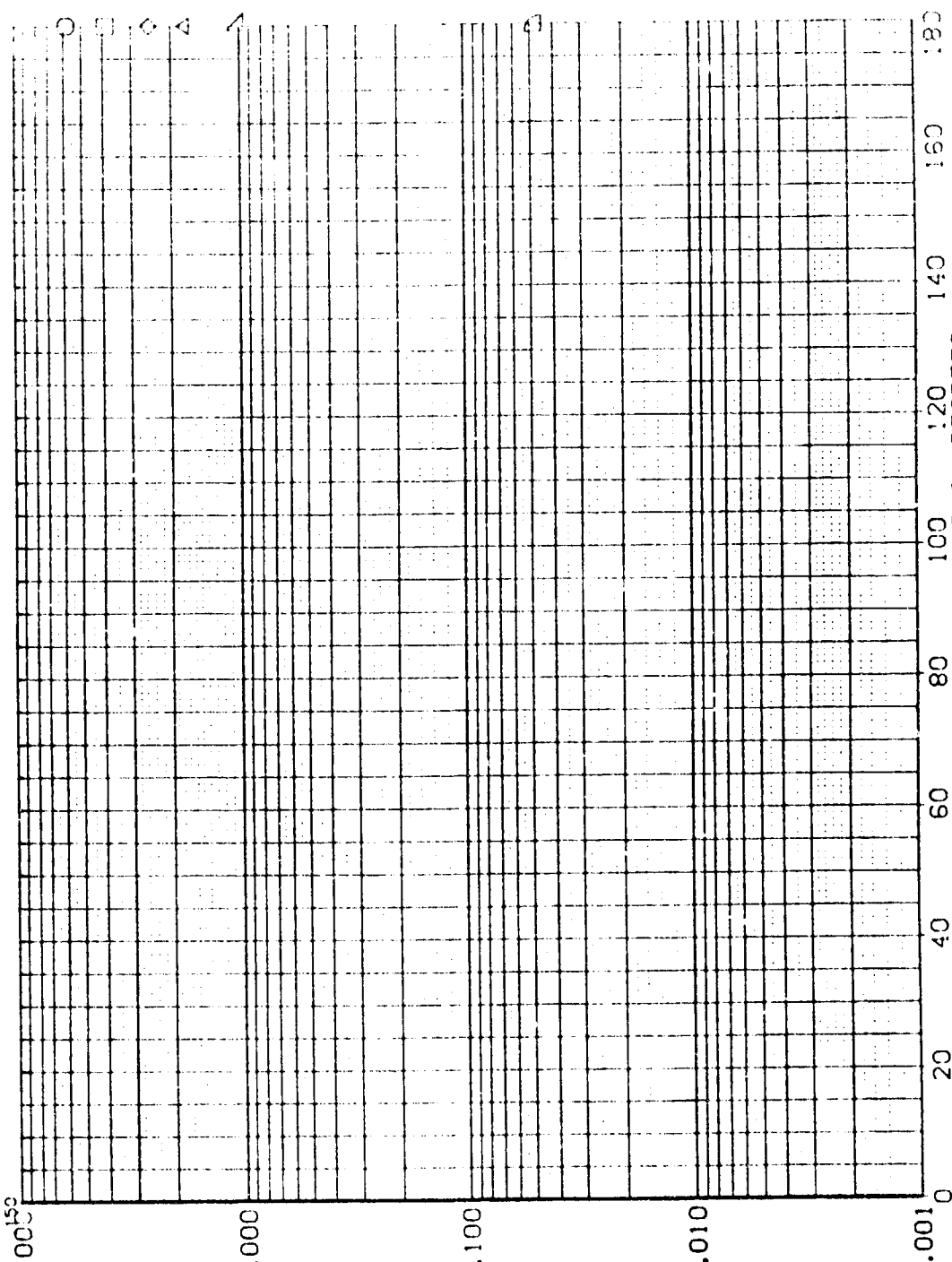


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

!H18 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT02)

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA .000
 DELTA .175

SYMBOL X/L MAX/HT RN/L
 .200
 .250
 .300
 .350
 .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

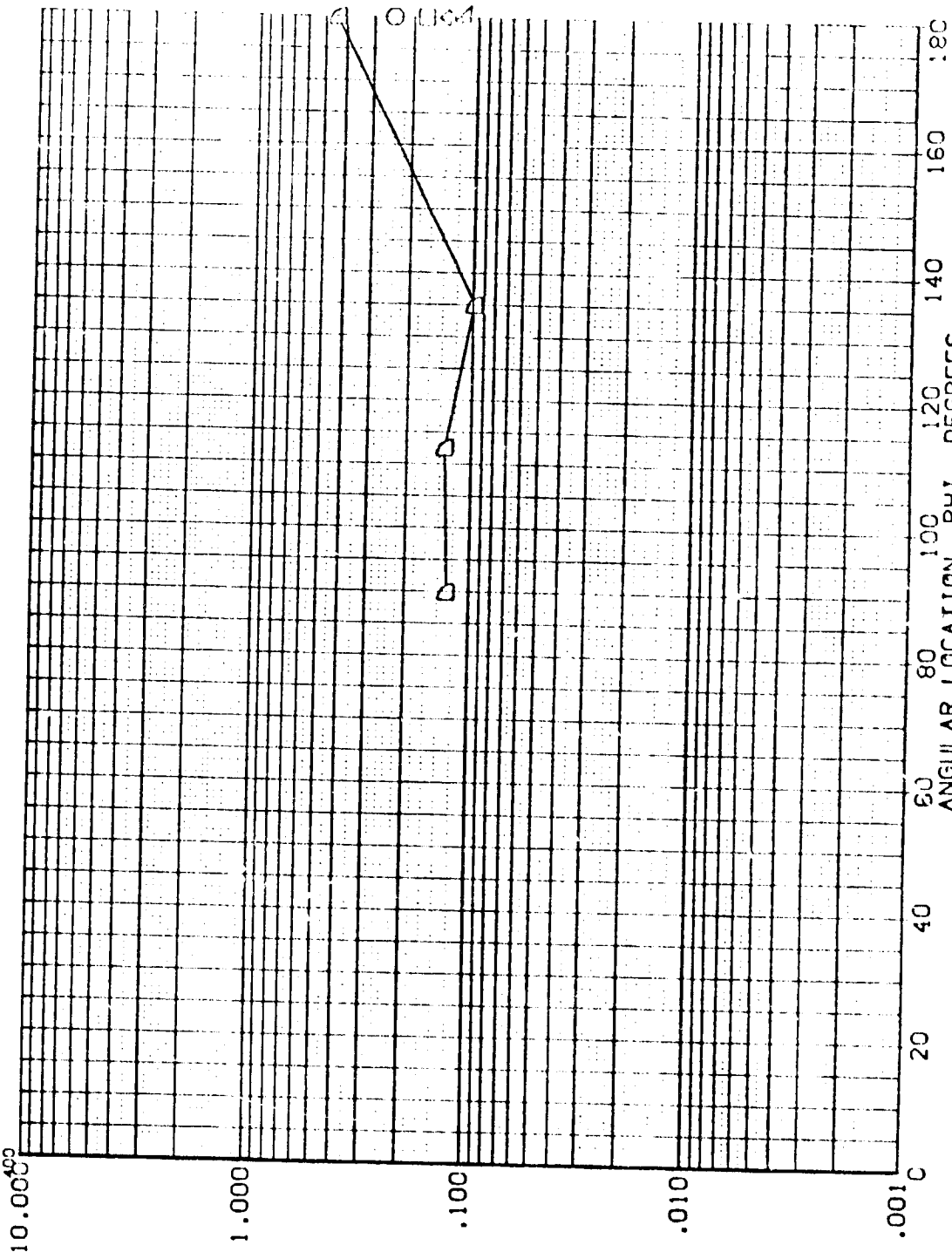


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C507W87M3F4V5 T8

EXTERNAL TANK (RQMT02)

SYMBOL X/L HAW/HT RN/L

□ .425 .900 4.807
 ◇ .450
 ◇ .475
 ◇ .500
 ◇ .525
 ◇ .550

PARAMETRIC VALUES
 ALPHA .003
 MACH 6.000
 BETA .000
 DELTAH .005

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS - H/HREF

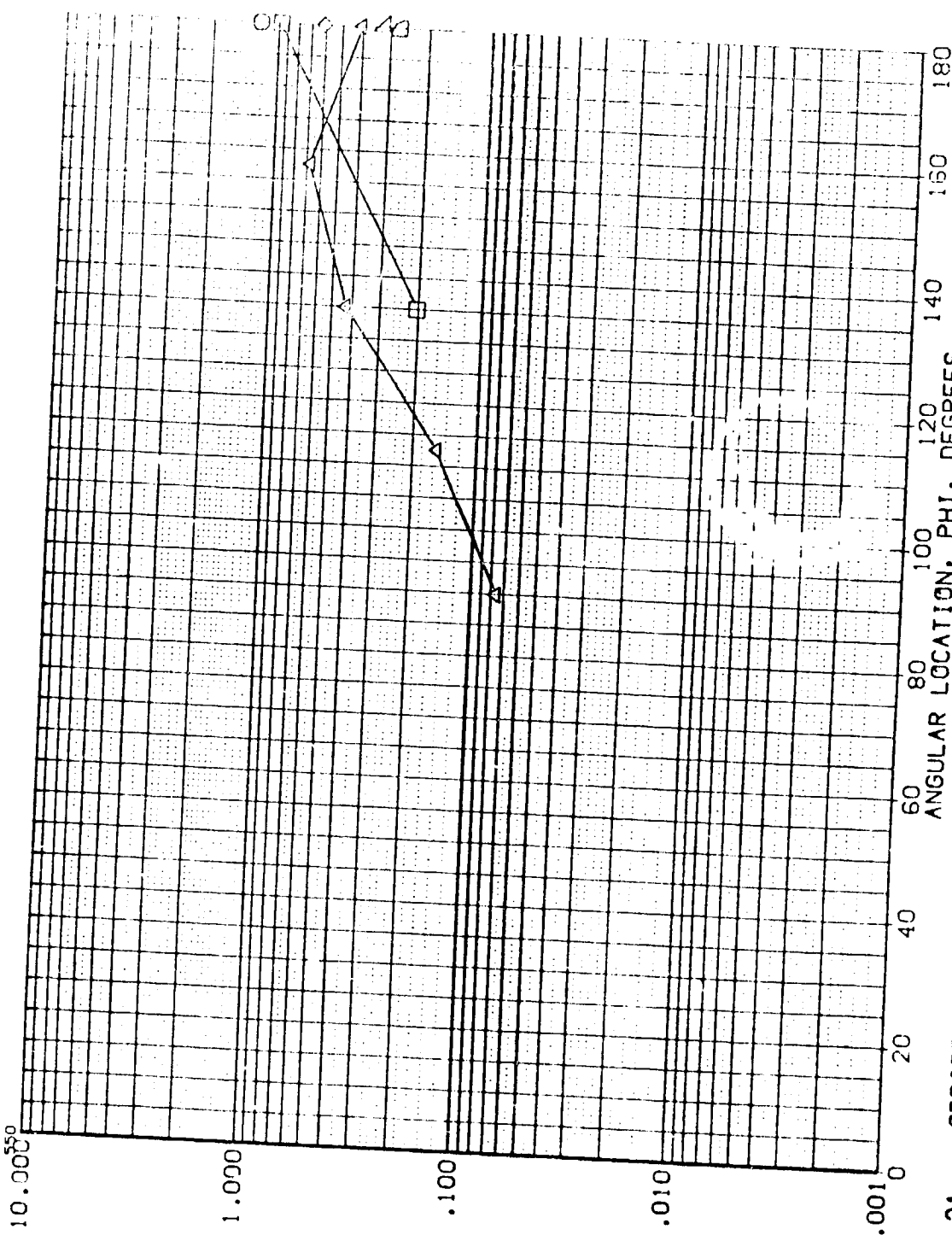


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

1H18 B10C507W87M3F4V5 T8

EXTERNAL TANK (RQMT02)

SYMBOL X/L
 □ .600
 ◇ .550
 △ .700
 ▽ .800
 ▴ .900

HAW/HT .900
 RN/L 4.807

PARAMETRIC VALUES
 ALPHA .000
 BETA 6.000
 MACH .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

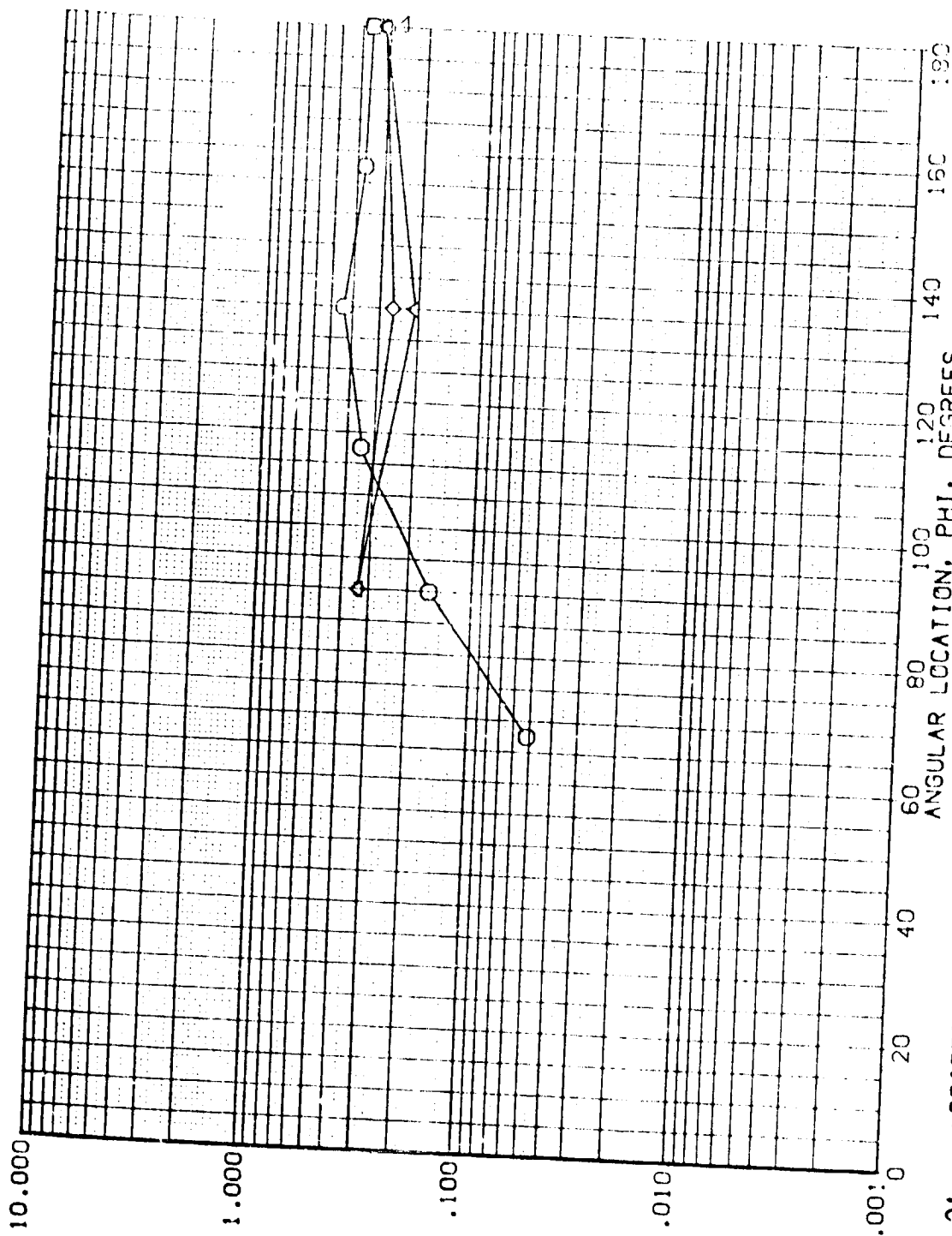


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

IH18 B10C5D7W87M3F4V5 T8

EXTERNAL TANK

(RQMT02)

SYMBOL X/L HAW/HT RN/L
 0.200
 0.250
 0.300
 0.350
 0.375
 10.000

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 BETA .000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

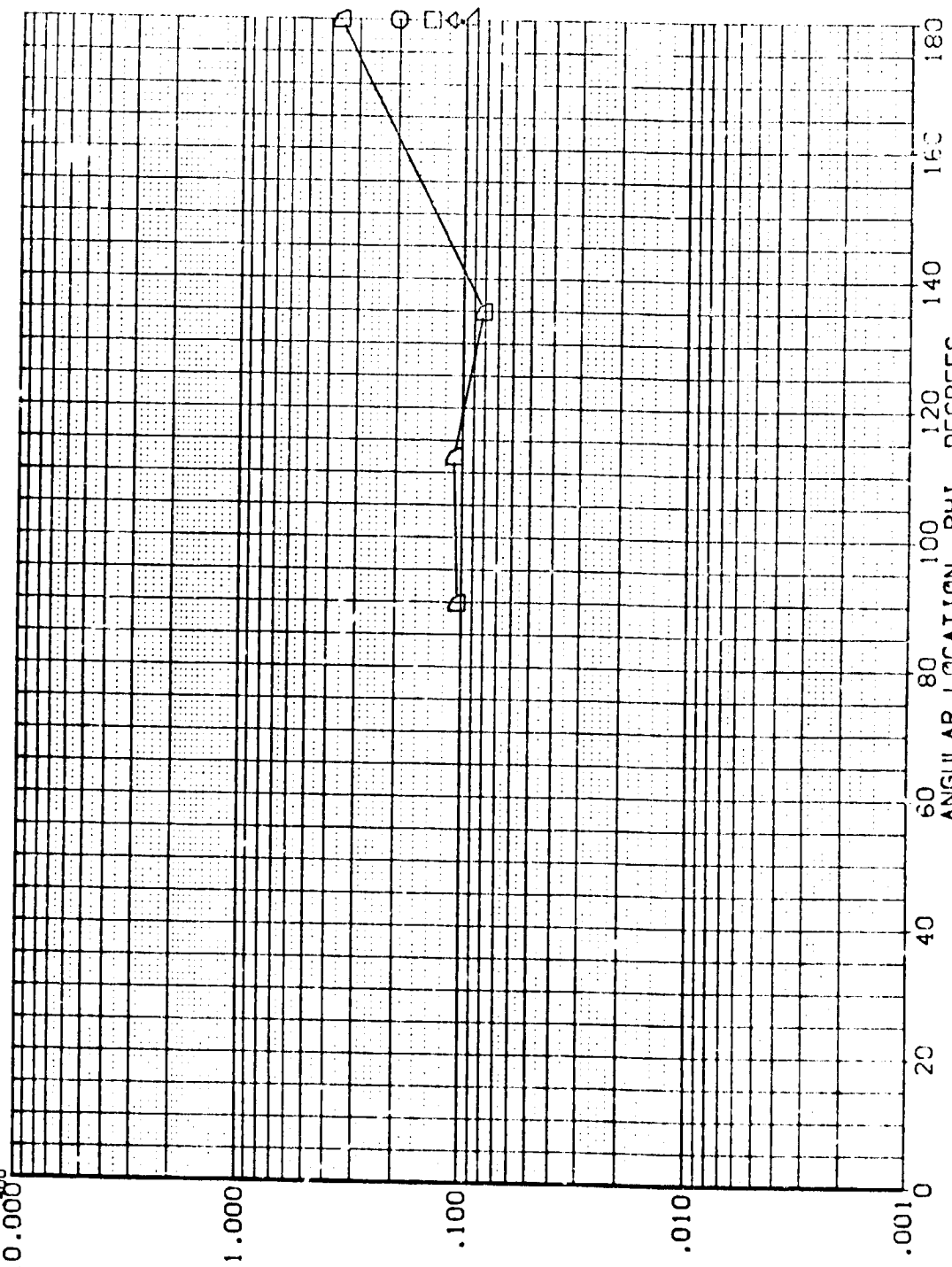


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

PARAMETRIC VALUES
 ALPHA .000 BETA .000
 MACH 6.000 DELTAH .175

SYMBOL X/L HAW/HT RN/L
 .425
 .450
 .475
 .500
 .525
 .550

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

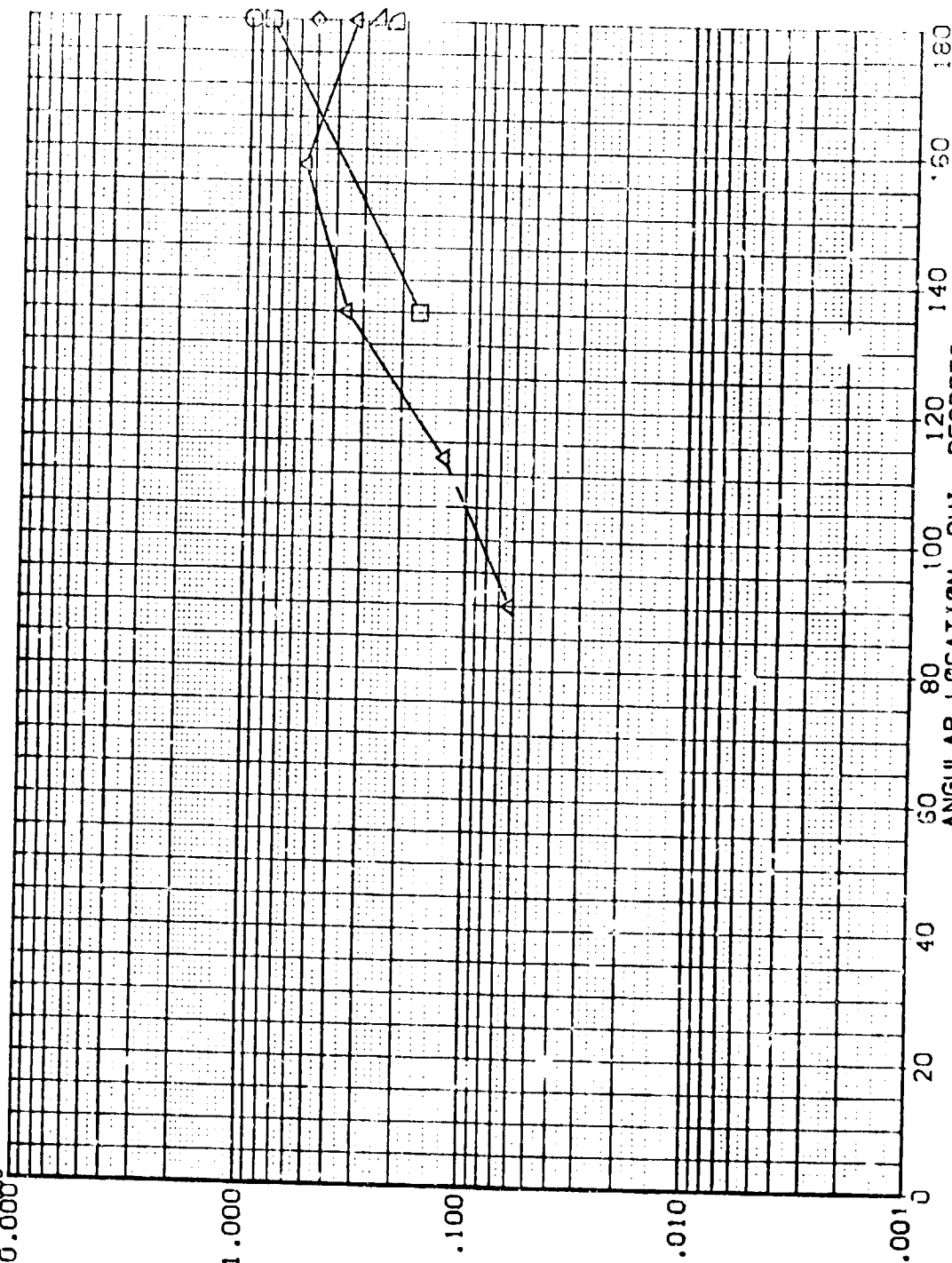


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

IH18 B10C5D7W87M3F4V5 T8

EXTERNAL TANK

(RQMT02)

SYMBOL	X/L	HAW/HT	RN/L	PARAMETRIC VALUES
□	.600	1.000	4.807	ALPHA
◇	.650			MACH
◇	.700			
◇	.800			
◇	.900			
				BETA
				DELTA

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

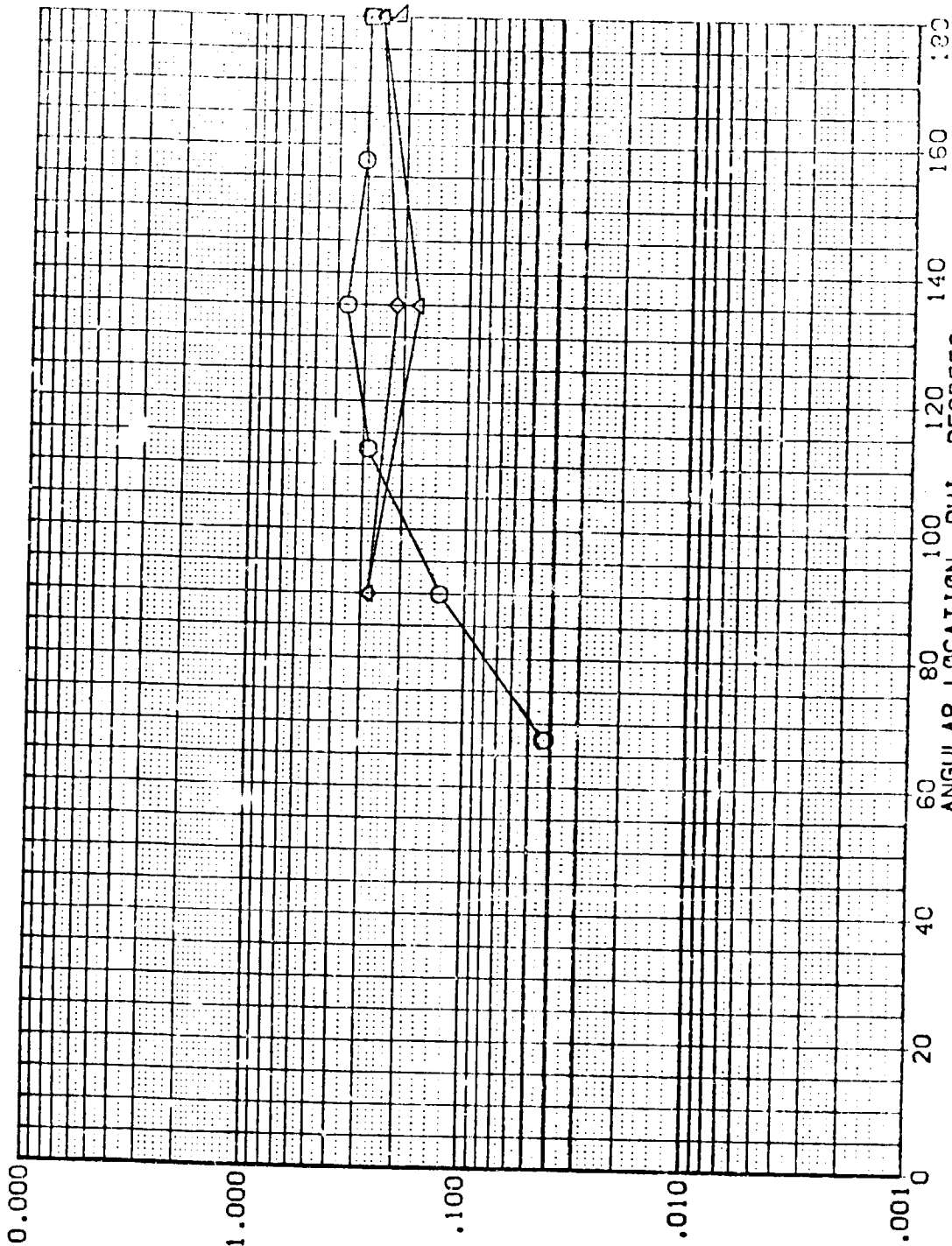


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C507W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 5.000 DELTAM .175

SYMBOL X/L HAW/HT RN/L
 □ .000
 ◇ .010
 △ .020
 ○ .060
 ○ .100

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

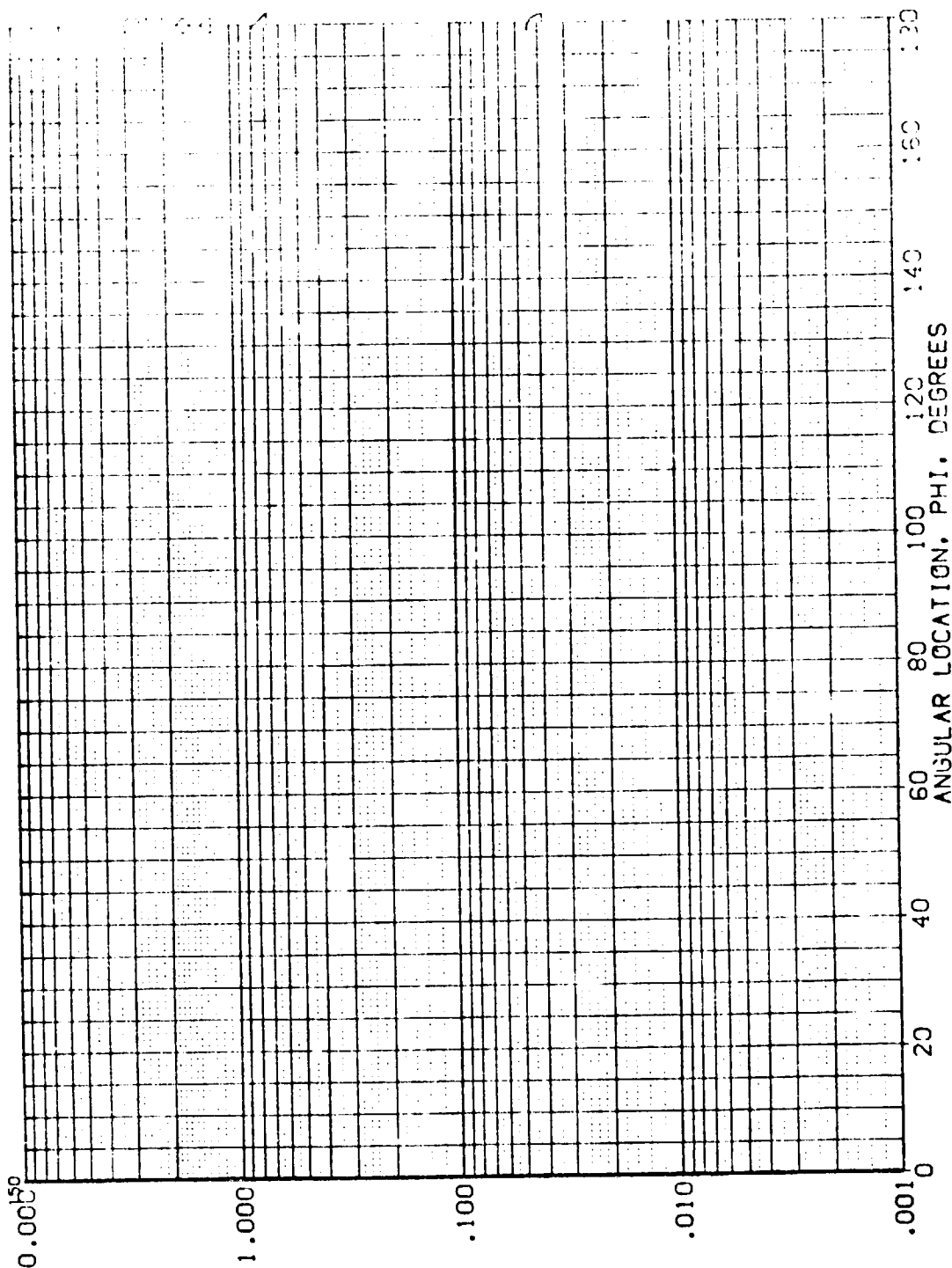


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C507W87M3F4V5 T8

EXTERNAL TANK

(RQMT03)

PARAMETRIC VALUES
 ALPHA MACH -5.000
 BETA DELTAH 6.000
 .000 .175

SYMBOL X/L HAV/HT RN/L
 ▽ .200
 ▽ .250
 ▽ .300
 ▽ .350
 ▽ .375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

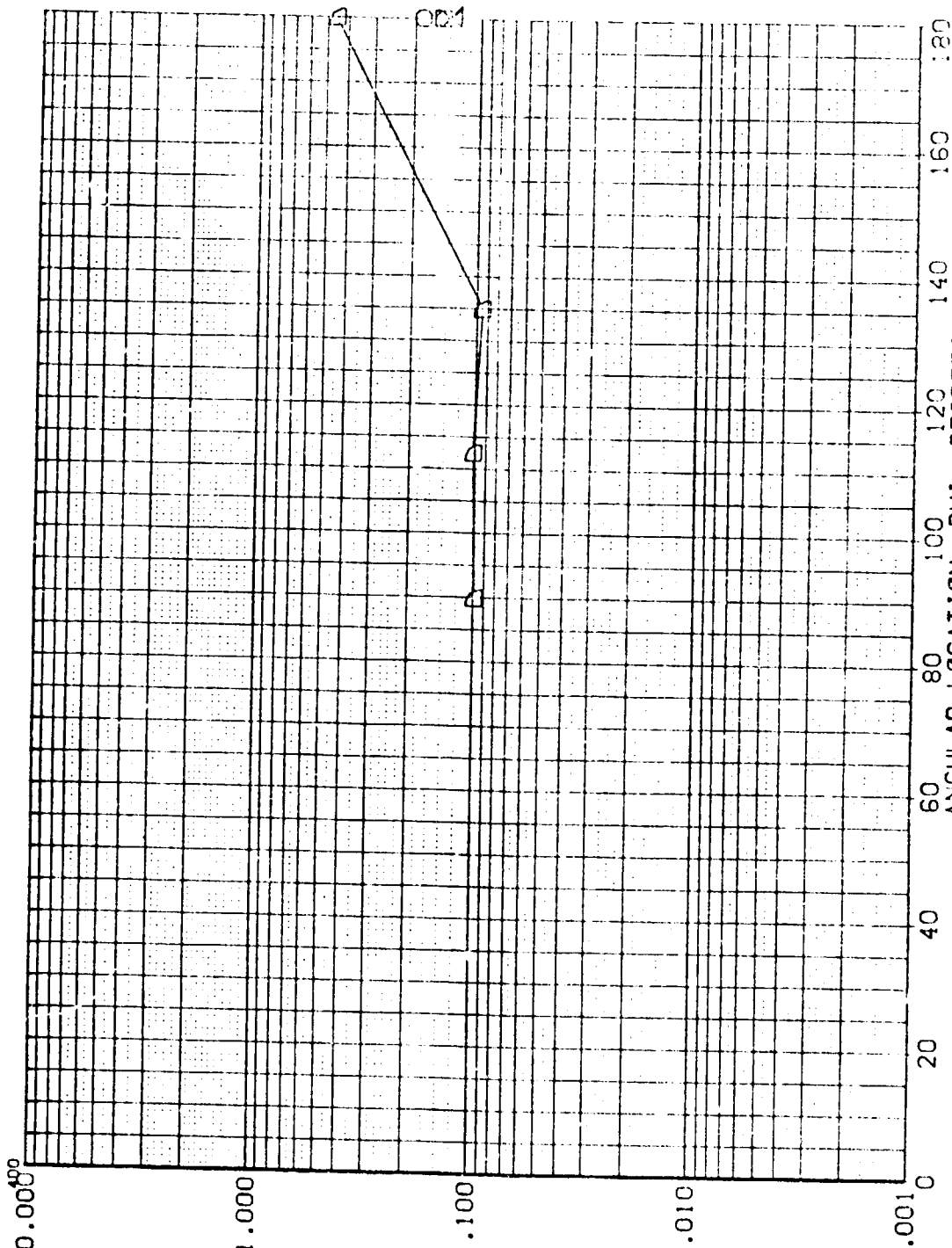


FIG 21 CRBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

SYMBOL X/L HAW/HT RN/L
 .425
 .450
 .475
 .500
 .525
 .550

PARAMETRIC VALUES
 ALPHA -5.000 BE"A
 MACH 6.000 DELTAH .115

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

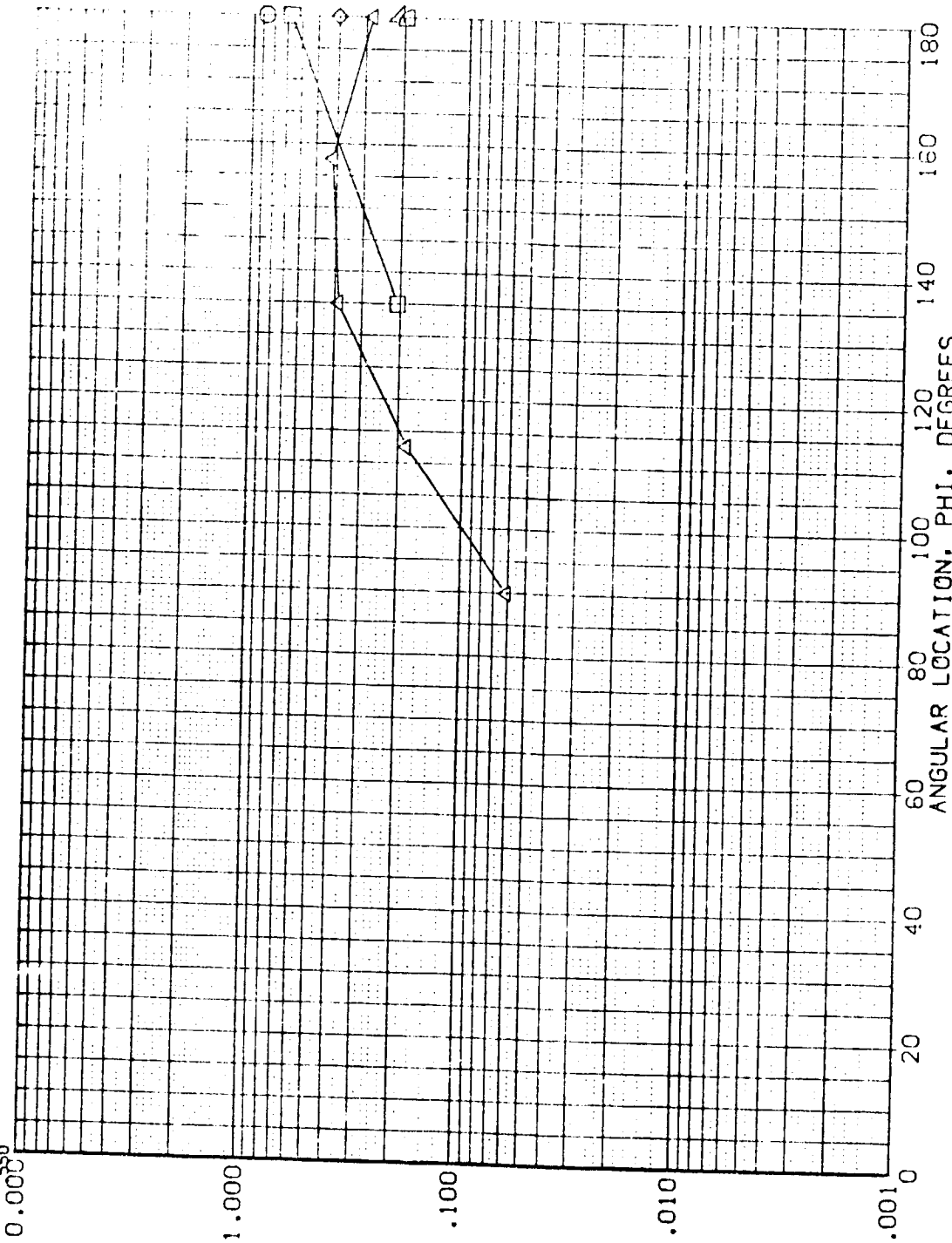


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

IH18 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

SYMBOL	X/L	HAW/HT	RN/L	PARAMETRIC VALUES	
				ALPHA	BETA
□	.600	.850	4.908	-5.000	.000
◇	.650			5.000	.175
△	.700				
▽	.800				
▽	.900				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

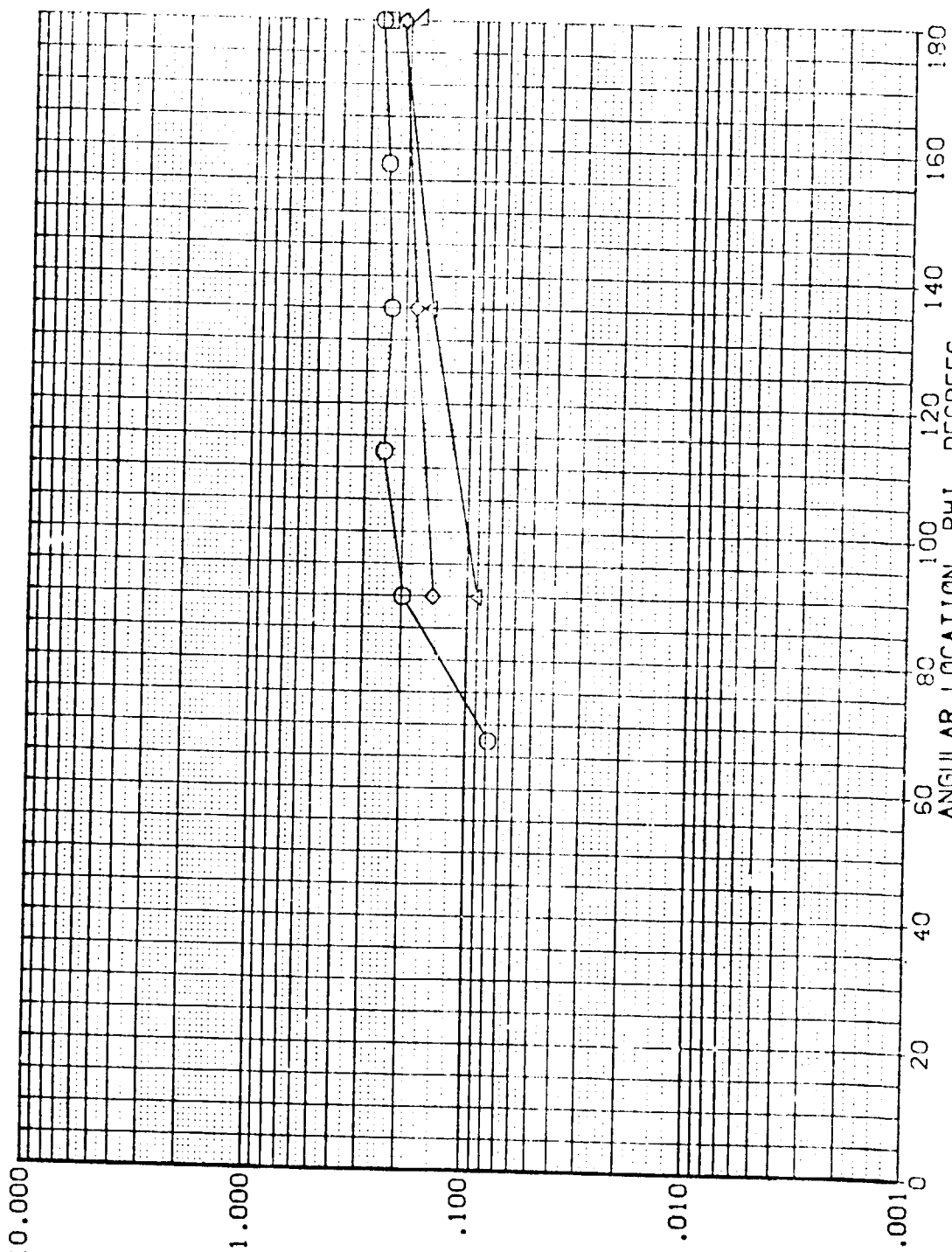


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

SYMBOL X/L HAW/HT RN/L

□ 10.000
 ▽ 1.000
 ▽ 0.100
 ▽ 0.010
 ▽ 0.001

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA 0.00
 DELTAN 0.05

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

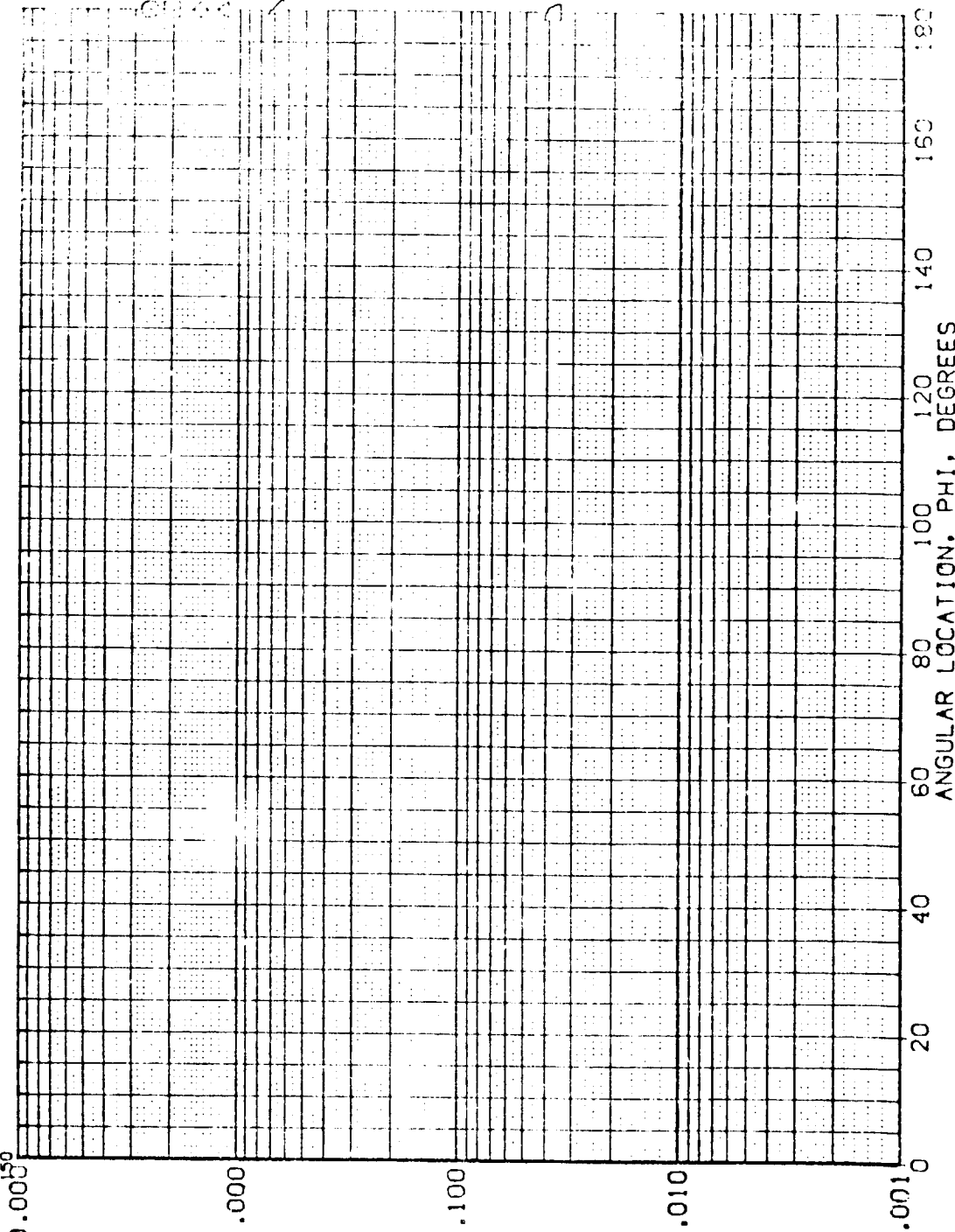


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 810C5D7W87M3F4V5 T8

EXTERNAL TANK

(RQMT03)

SYMBOL X/L
 ▽ .200
 ▽ .250
 ▽ .300
 ▽ .350
 ▽ .375
 ▽ .400

HAW/HT .900
 RN/L 4.908

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA DELTA
 .000 .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

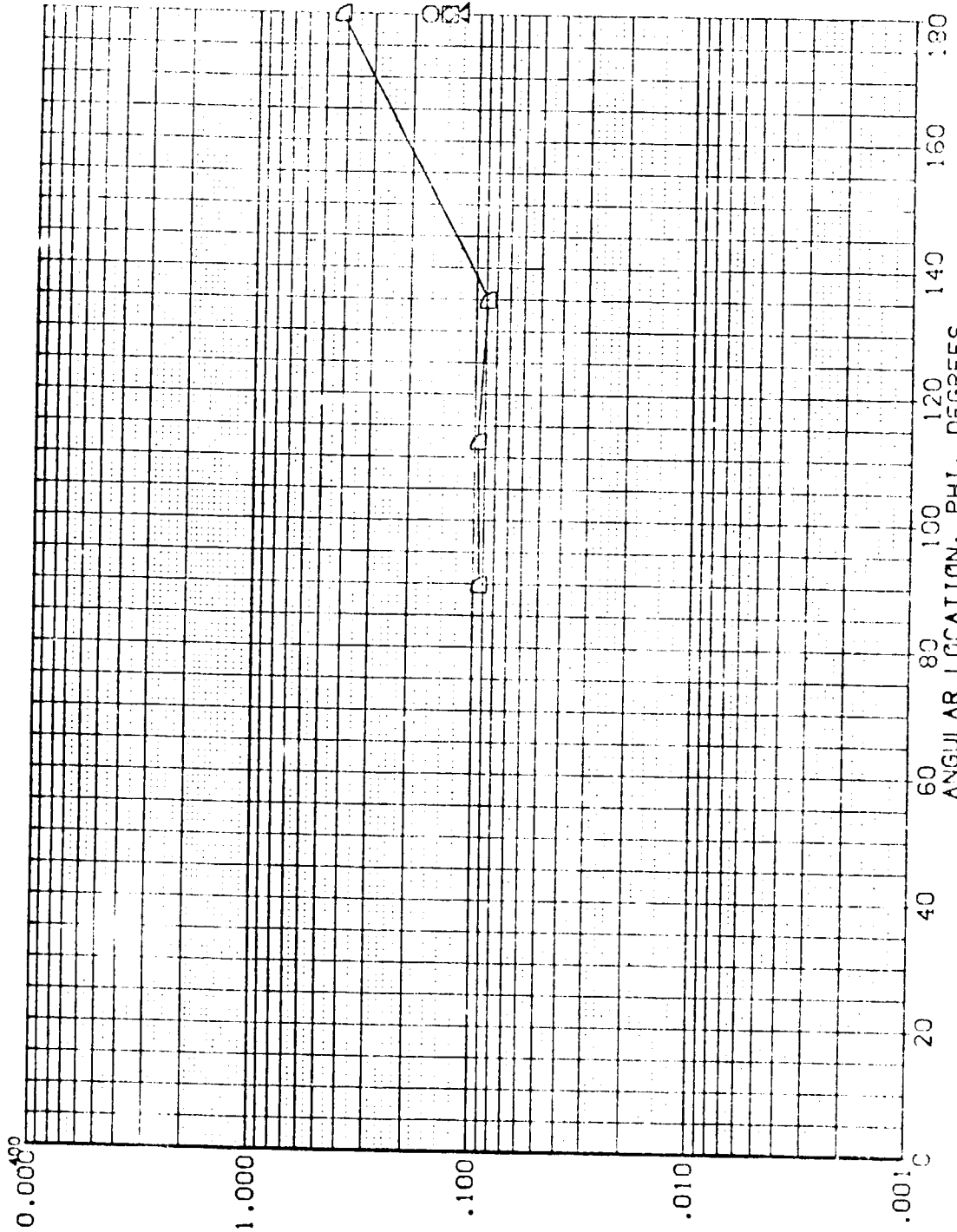


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 810C507W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

SYMBOL K/L HAW/HT RN/L
 0.425
 0.450
 0.475
 0.500
 0.525
 0.550

PARAMETRIC VALUES
 ALPHA -5.000
 BETA 6.100
 DELTAH 1.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

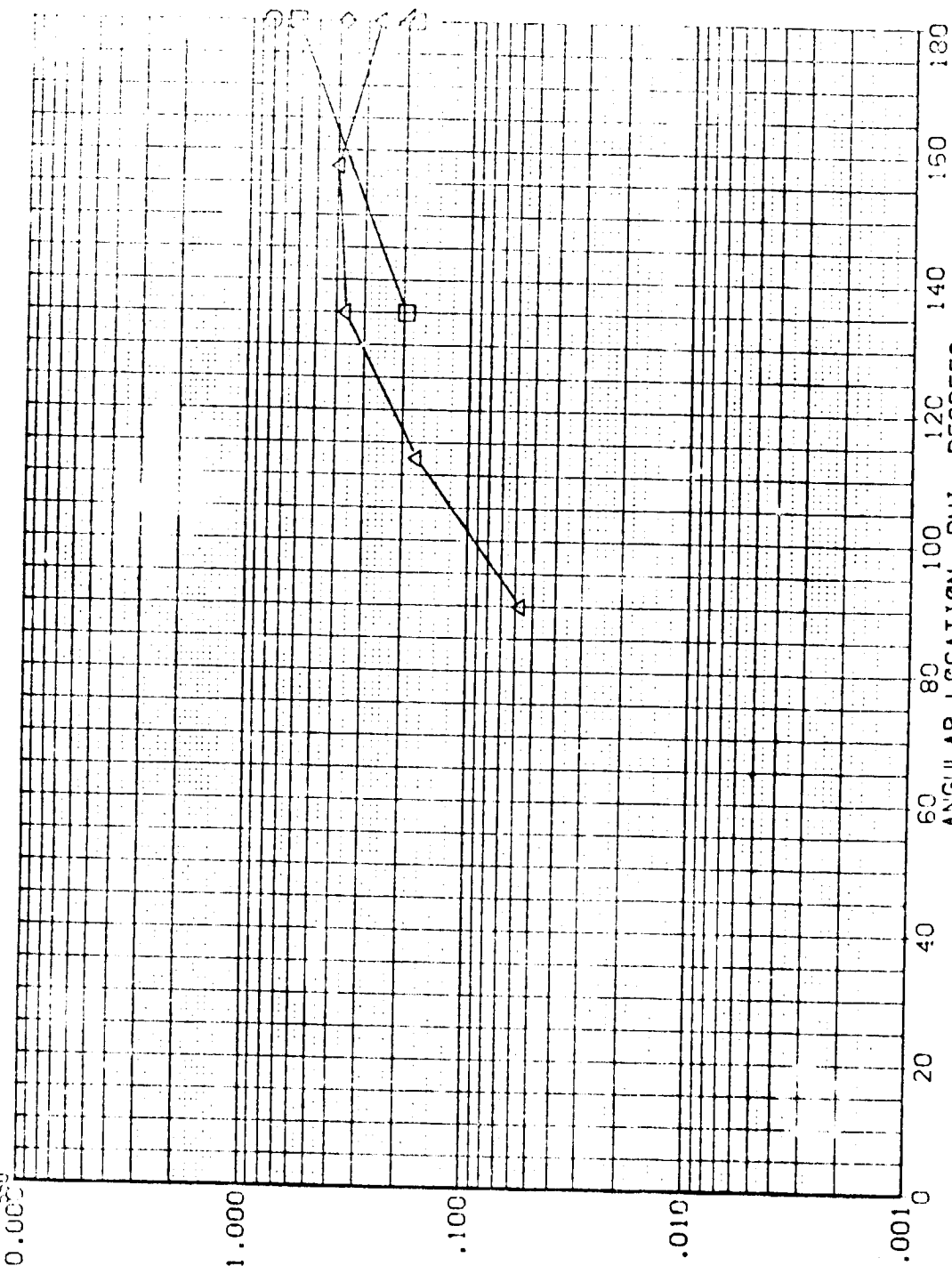


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

IH18 B10C507W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

SYMBOL
 ∇ \diamond \square \square

X/L
 .600
 .650
 .700
 .800
 .900

HAW/HT
 .900

RN/L
 4.908

PARAMETRIC VALUES
 ALPHA
 MACH
 -5.000
 6.000
 BETA
 DELTA
 .000
 .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

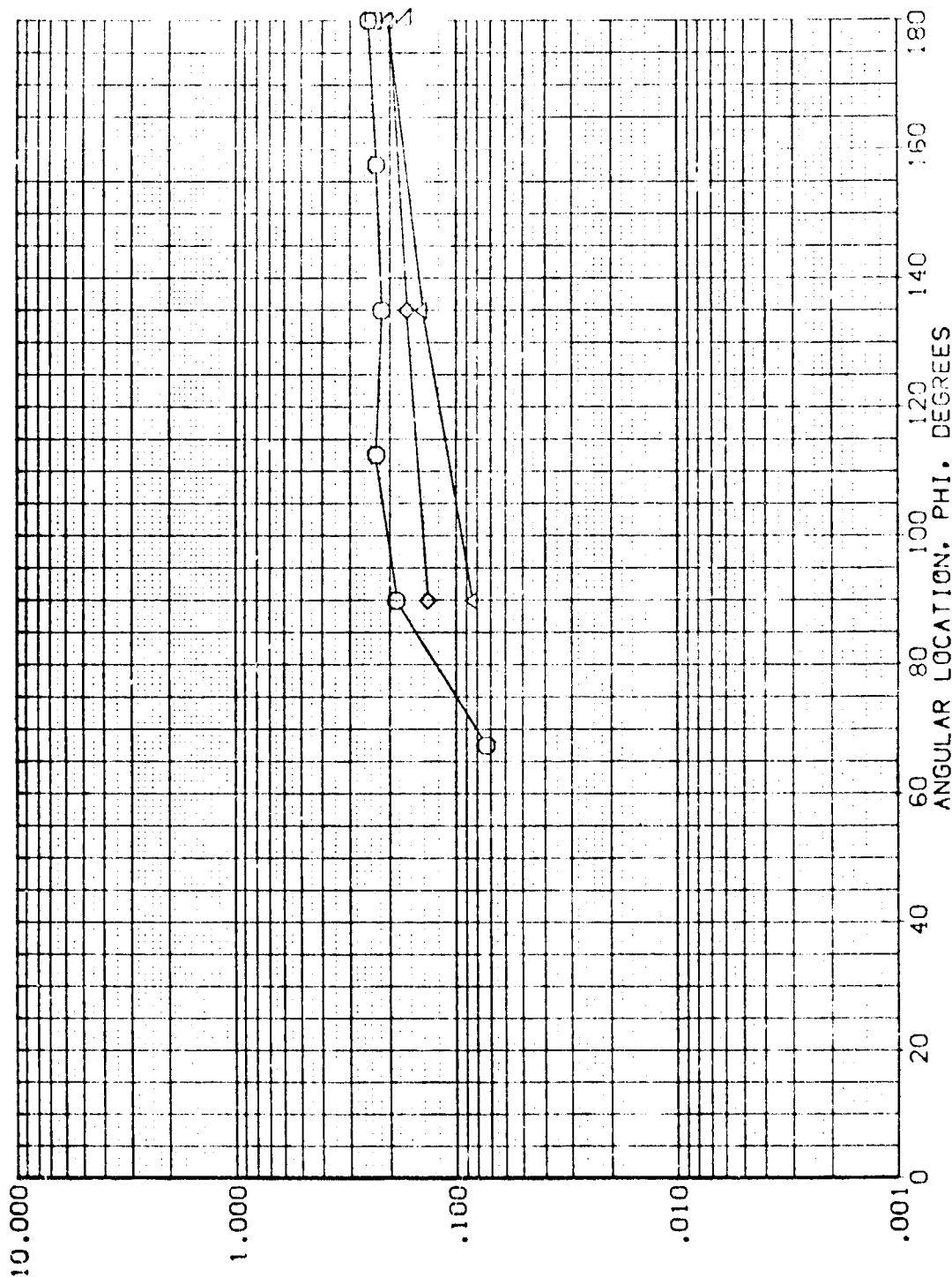


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

1H18 B10C5D7W87M3F4V5 T8 EXTERNAL TANK (RQMT03)

MAW/HT 1.000 RN/L 4.908

PARAMETRIC VALUES
ALPHA -5.000 BETA 0.000
MACH 6.000 DELTAH 0.000

SYMBOL X/L
□ .000
◇ .010
△ .020
▽ .060
▽ .100

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

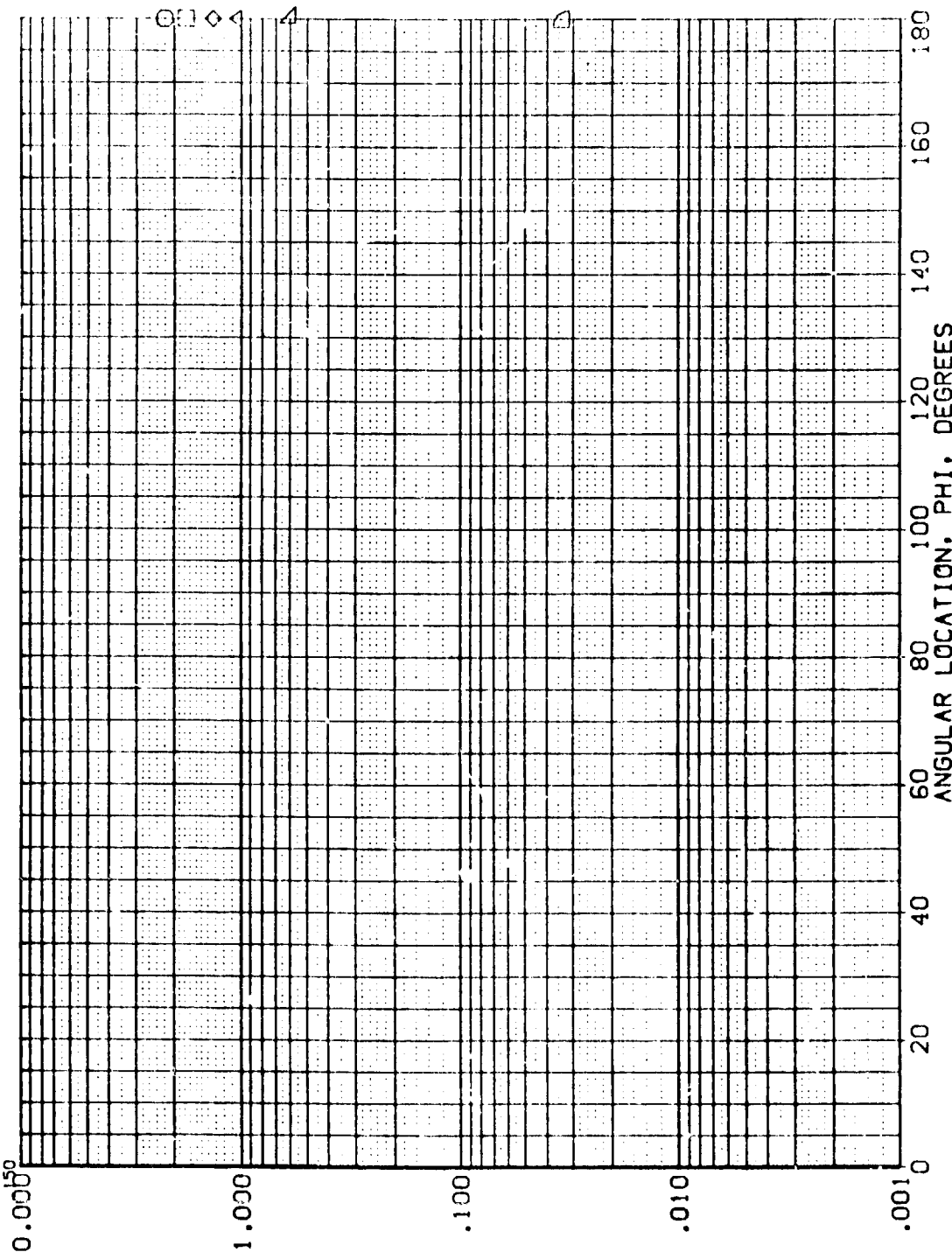


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

!H18 810C507W87M3F4V5 T8

EXTERNAL TANK

(RQMT03)

SYMBOL X/L HAW/HT RN/L
 □ .200
 ▽ .250
 ◇ .300
 ◊ .350
 ◊ .375

1.000 4.908

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 BETA .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

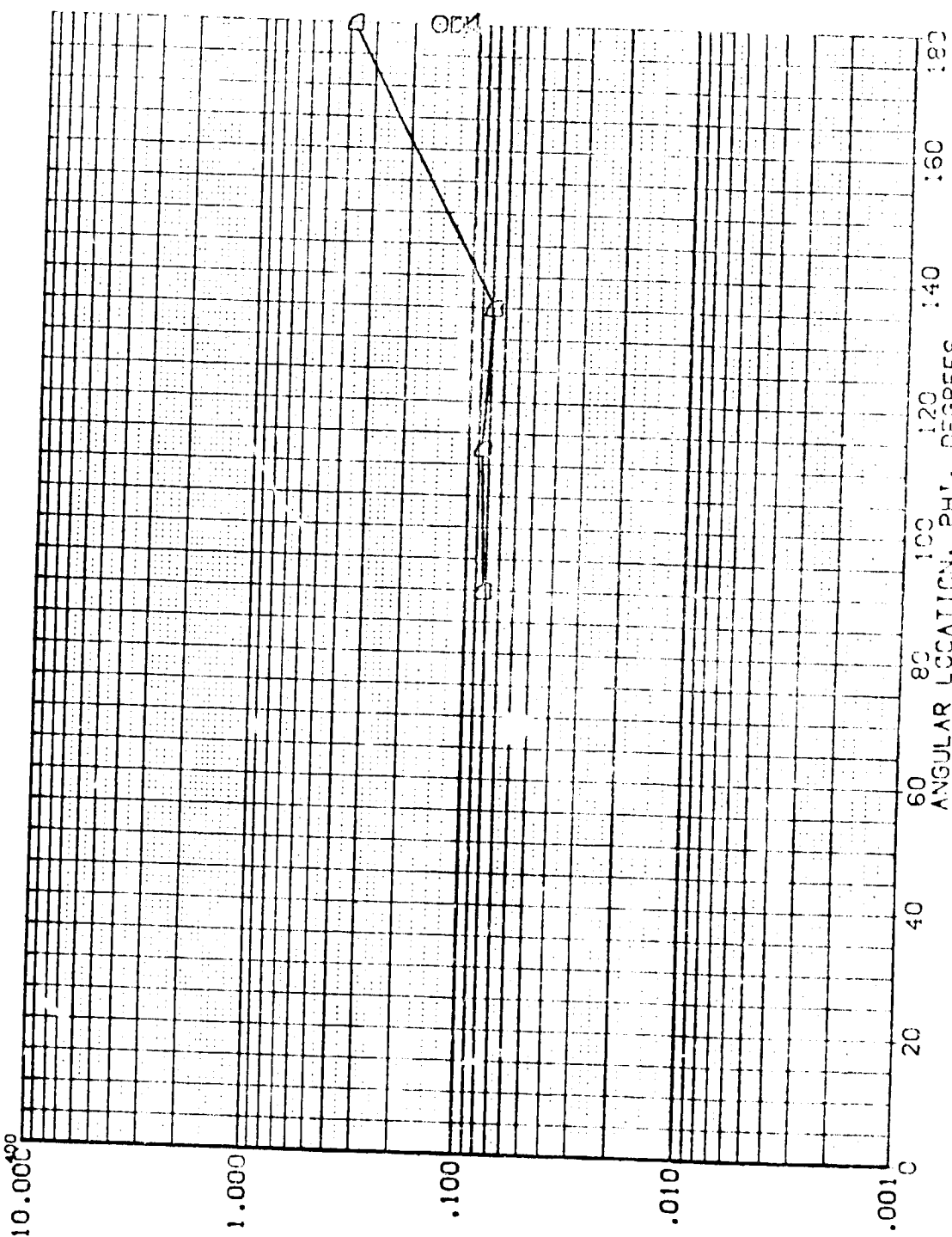


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

SYMBOL X/L HAW/HT RN/L

PARAMETRIC VALUES
ALPHA BETA
HACH DELTAH

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

10.000
5.50
1.000
0.500
0.250
0.125
0.0625
0.03125
0.015625
0.0078125
0.00390625
0.001953125
0.0009765625
0.00048828125
0.000244140625
0.0001220703125
0.00006103515625
0.000030517578125
0.0000152587890625
0.00000762939453125
0.000003814697265625
0.0000019073486328125
0.00000095367431640625
0.000000476837158203125
0.0000002384185791015625
0.00000011920928955078125
0.000000059604644775390625
0.0000000298023223876953125
0.00000001490116119384765625
0.000000007450580596923828125
0.0000000037252902984619140625
0.00000000186264514923095703125
0.000000000931322574615478515625
0.0000000004656612873077392578125
0.00000000023283064365386962890625
0.000000000116415321826934814453125
0.0000000000582076609134674072265625
0.00000000002910383045673370361328125
0.000000000014551915228366851806640625
0.0000000000072759576141834259033203125
0.00000000000363797880709171295166015625
0.000000000001818989403545856475830078125
0.0000000000009094947017729282379150390625
0.00000000000045474735088646411895751953125
0.000000000000227373675443232059478759765625
0.0000000000001136868377216160297393798828125
0.00000000000005684341886080801486968994140625
0.000000000000028421709430404007434844970703125
0.0000000000000142108547152020037174224853515625
0.00000000000000710542735760100185871124267578125
0.000000000000003552713678800500929355621337890625
0.0000000000000017763568394002504646778106689453125
0.00000000000000088817841970012523233890533447265625
0.000000000000000444089209850062616169452667236328125
0.0000000000000002220446049250313080847263336181640625
0.00000000000000011102230246251565404236316680908203125
0.000000000000000055511151231257827021181583340541015625
0.00000000000000002775557561562891351059079167027053125
0.000000000000000013877787807814456755295395835135265625
0.0000000000000000069388939039072283776476979175676328125
0.00000000000000000346944695195361418882384895878381640625
0.000000000000000001734723475976807094411924479391908203125
0.0000000000000000008673617379884035472055962396959541015625
0.000000000000000000433680868994201773602798119847977053125
0.0000000000000000002168404344971008868013990599239885265625
0.0000000000000000001084202172485504434006995299619942628125
0.00000000000000000005421010862427522170034976498099713140625
0.000000000000000000027105054312137610850174882490498565703125
0.0000000000000000000135525271560688054250874412452492828515625
0.000000000000000000006776263578034402712543720624762464140625
0.0000000000000000000033881317890172013562718603124812320703125
0.00000000000000000000169406589450860067813593015624061103515625
0.000000000000000000000847032947254300339067965078120305517578125
0.00000000000000000000042351647362715016953398253906015278828125
0.000000000000000000000211758236813575084766991269530076394140625
0.0000000000000000000001058791184067875423834956347650381970703125
0.00000000000000000000005293955920339377119172281738251909853515625
0.000000000000000000000026469779601696885595861408691259549267578125
0.0000000000000000000000132348898008484427979307043456297746337890625
0.00000000000000000000000661744490042422139896535217281488731689453125
0.000000000000000000000003308722450212110699482676086407443658447265625
0.0000000000000000000000016543612251060553497413380432037218292236328125
0.00000000000000000000000082718061255302767487066902160186091461181640625
0.000000000000000000000000413590306276513837435334510800930457305908203125
0.0000000000000000000000002067951531382569187176672554004652286529541015625
0.000000000000000000000000103397576569128459358833627700232614326477053125
0.0000000000000000000000000516987882845642296794168138501163071632385265625
0.00000000000000000000000002584939414228211483970840692505815358161926328125
0.000000000000000000000000012924697071141057419854203462529076790809631640625
0.0000000000000000000000000064623485355705287099271017312645383954048158203125
0.00000000000000000000000000323117426778526435496355086563226977270240791015625
0.0000000000000000000000000016155871338926321774817754328161348883612039553125
0.00000000000000000000000000080779356694631608874088771640806744418060197765625
0.000000000000000000000000000403896783473158044370443858204033722090300988828125
0.0000000000000000000000000002019483917365790221852219291020168610451504944140625
0.00000000000000000000000000010097419586828951109261096455100843052257524720703125
0.000000000000000000000000000050487097934144755546305482275504215261287623603515625
0.0000000000000000000000000000252435489670723777731527411377521076306438118017578125
0.00000000000000000000000000001262177448353618888657637056887605381532190590087890625
0.000000000000000000000000000006310887241768094443288185283443801907660952950439453125
0.0000000000000000000000000000031554436208840472216440926417219009538304764752197265625
0.00000000000000000000000000000157772181044202361082204632086095047691523823760986328125
0.000000000000000000000000000000788860905221011805411023160430475238457619118804931640625
0.0000000000000000000000000000003944304526105059027055115802152376192288095594024658203125
0.00000000000000000000000000000019721522630525295135275579010761880961440477970123291015625
0.0000000000000000000000000000000986076131526264756763778950538094048072023898506164553125
0.00000000000000000000000000000004930380657631323783818894752690470240360119492530822765625
0.000000000000000000000000000000024651903288156618919094473763452351201800597462654113828125
0.0000000000000000000000000000000123259516440783094595472368817261756009002987313270569140625
0.00000000000000000000000000000000616297582203915472977361844086308780045014936566352845703125
0.000000000000000000000000000000003081487911019577364886809220431543900225074682831764228515625
0.0000000000000000000000000000000015407439555097886824434046102157719501125373414158821142578125
0.00000000000000000000000000000000077037197775489434122170230510788597505626867070794105712890625
0.000000000000000000000000000000000385185988877447170610851152553942987528134335353970528564453125
0.0000000000000000000000000000000001925929944387235853054255762769714937640671676769852642822265625
0.00000000000000000000000000000000009629649721936179265271278813848574688203358383849263214111328125
0.000000000000000000000000000000000048148248609680896326356394069242873441016791919246316070556640625
0.0000000000000000000000000000000000240741243048404481631781970346214367205083959596231580352783203125
0.00000000000000000000000000000000001203706215242022408158909851731071836025419797981157901763916015625
0.000000000000000000000000000000000006018531076210112040794549258655359180127098989905789508819580078125
0.0000000000000000000000000000000000030092655381050560203972746293276795900635494949528947544097900390625
0.00000000000000000000000000000000000150463276905252801019863731466383979503177474747644737720489501953125
0.000000000000000000000000000000000000752316384526264005099318857333194897515888737373223688602447509765625
0.0000000000000000000000000000000000003761581922631320025496594286665974487579443686866118443012237548828125
0.00000000000000000000000000000000000018807909613156600127482971433329872437897218434330592215061187744140625
0.000000000000000000000000000000000000094039548065783000637414857166659862189486092171665296107505938720703125
0.0000000000000000000000000000000000000470197740328915003187074285833299310947430460858326480537529693603515625
0.00000000000000000000000000000000000002350988701644575015935371429166496554737152304291632402687648468017578125
0.000000000000000000000000000000000000011754943508222875079676857145832482773685761521458162013438242340087890625
0.0000000000000000000000000000000000000058774717541114375398384285729162413868428807607290810067191211700439453125
0.00000000000000000000000000000000000000293873587705571876991921428645812069342144038036454050335956058502197265625
0.000000000000000000000000000000000000001469367938527859378495960714229060346710720190182270251679780292510986328125
0.0000000000000000000000000000000000000007346839692639296892479803571145301733553600950911351258398901462554931640625
0.00000000000000000000000000000000000000036734198463196484462399017855726508667768004754556756294944507312774658203125
0.000000000000000000000000000000000000000183670992315982422311995089278632543338840023772783781474722536563873291015625
0.009183549615799121115599754461431627166692001188639189057361126828168664553125
0.0045917748078995605577998772307158135833460005943195945286805634140833322765625
0.00229588740394978027889993861535790679167300029715979726434028170704166611328125
0.001147943701974890139449969307678953395836500148579898632170140853520833056640625
0.000573971850987445069724984653839476697918250074289949449310070426760416628203125
0.0002869859254937225348624923269197383489591250371449747246550352133802083114140625
0.00014349296274686126743124616345986917447956251857248736232751760669010415570703125
0.0071746481373430633715623081729934587239781259286243673116378803345052277853515625
0.003587324068671531685781154086496729361989062964312183655818940167252613892678125
0.0017936620343357658428905770432483646809945314821560918279094700836263069463390625
0.00089683101716788292144528852162441823049972659107804591395473504181315347316953125
0.000448415508583941460722644260812209115249863295539022956977367520906576736584765625
0.0002242077542919707303613221304061045576249316477695114784886837604532883682923828125
0.00011210387714598536518066106520305227881246582388475573924434187522664418414619140625
0.0056051938572992682590330532601526114406232911942377869622170937613322092073095703125
0.00280259692864963412951652663007630572031164559711889348110854688066610460365478515625
0.00140129846432481706475826331503815286015557879855944674055427344033305230182739265625
0.000700649232162408532379131657501926430077789399279723370277136720166526150913696328125
0.0003503246160812042661895658287509632150388946996398616851385683600832627545568481640625
0.00017516230804060213309478291437548160751944734981993084256928418004163137727842408203125
0.00875811540203010665473914571877408037597236749099654212846420900208156688639212041015625
0.00437905770101505332736957285938704018798618374504982711423210450104078444319606102053125
0.002189528850507526663684786429693520093993091872524913557116052250520392221598030510265625
0.0010947644252537633318423932148467600469965459362624567785580261252601961079901525510265625
0.000547382212626881665921196607242330023498272968131228389279013062510098054995076275510265625
0.00027369110631344083296059830362116501174913648406561419463950653125504902749753813775510265625
0.0001368455531567204164802991518105825058745682420328070973197532656252524513748765688775510265625
0.00684227765783602082401495759052912529372841210164035486598766328125126225687438284438775510265625

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(RHT02)	IM18 B10C5D7M87M3F4V5 T8	.000	.000	5.000
(RHT03)	IM18 B10C5D7M87M3F4V5 T8	.000	-5.000	5.000

EXTERNAL TANK
EXTERNAL TANK

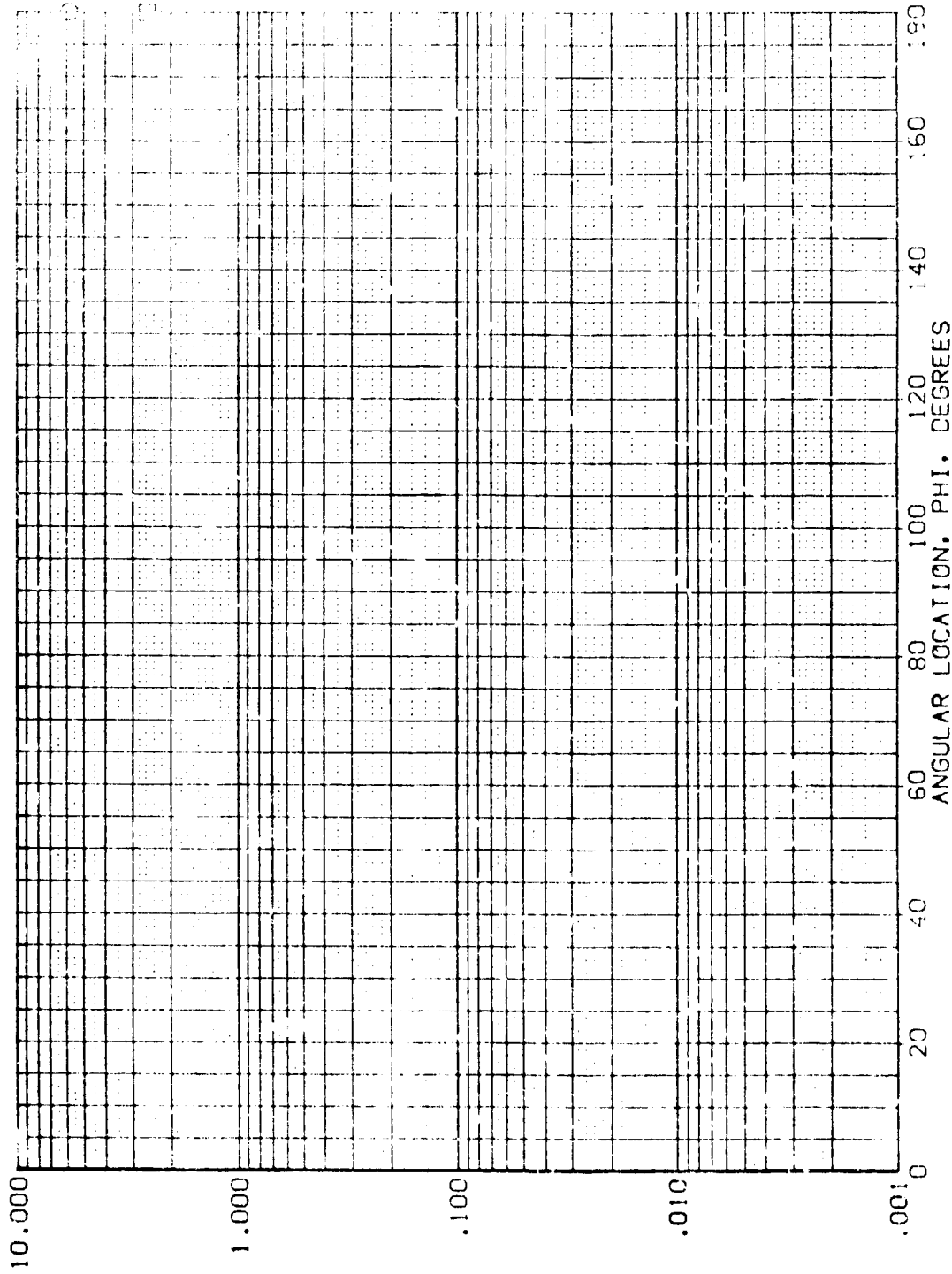


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.907 HAW/HT = .850 X/L = .000



DATA SET SYMBOL CONFIGURATION DESCRIPTION EXTERNAL TANK BETA ALPHA MACH
(K0MT02) [H18 B10C507487M3F4V5 T8] EXTERNAL TANK .000 .000 8.000
(R0MT03) [H18 B10C507487M3F4V5 T8] EXTERNAL TANK .000 -5.000 8.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

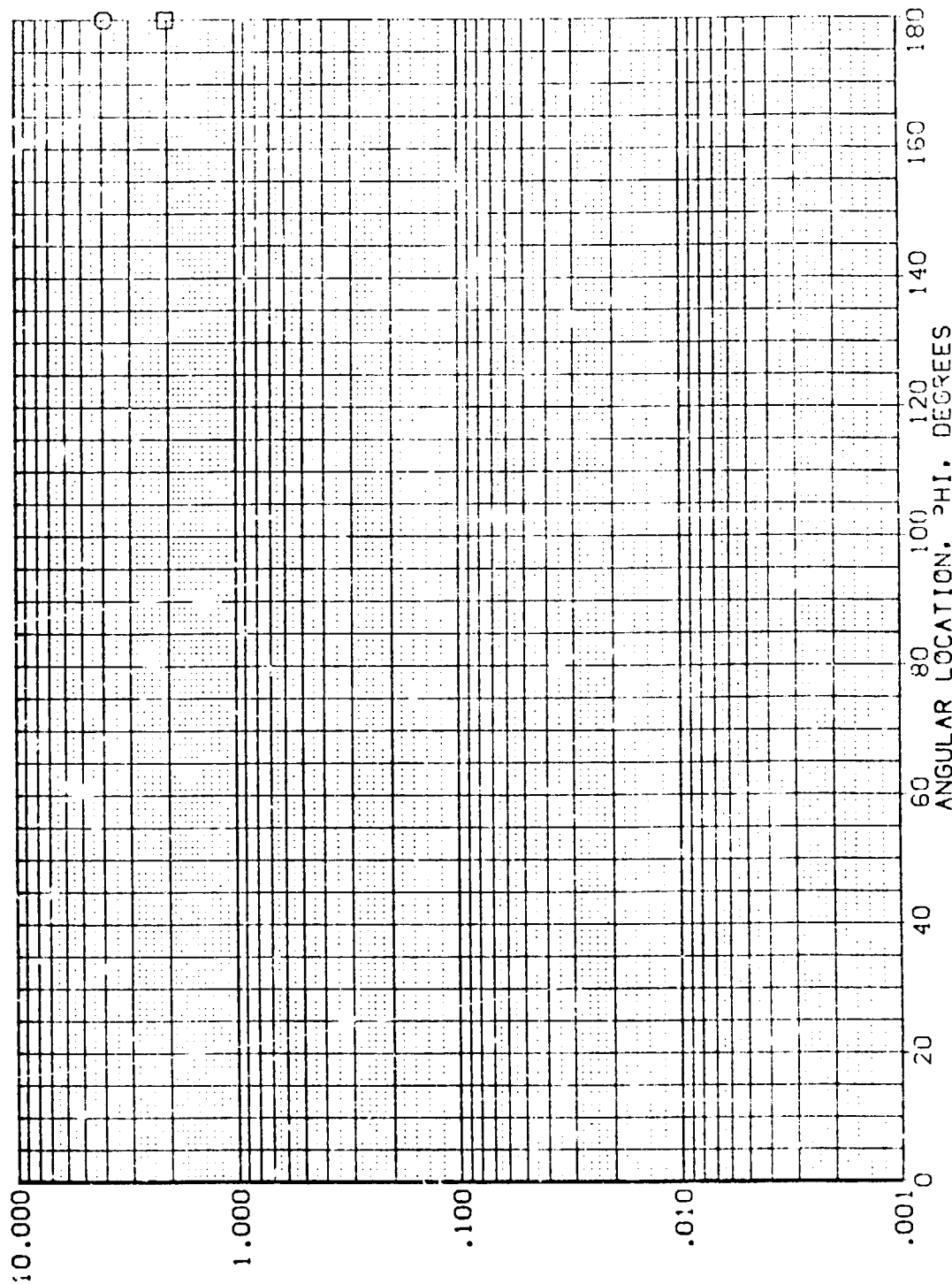


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .010

DATA SET SYMBOL
(RQMT02)
(RQMT03)



CONFIGURATION DESCRIPTION
IH18 B100
IH18 B100

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

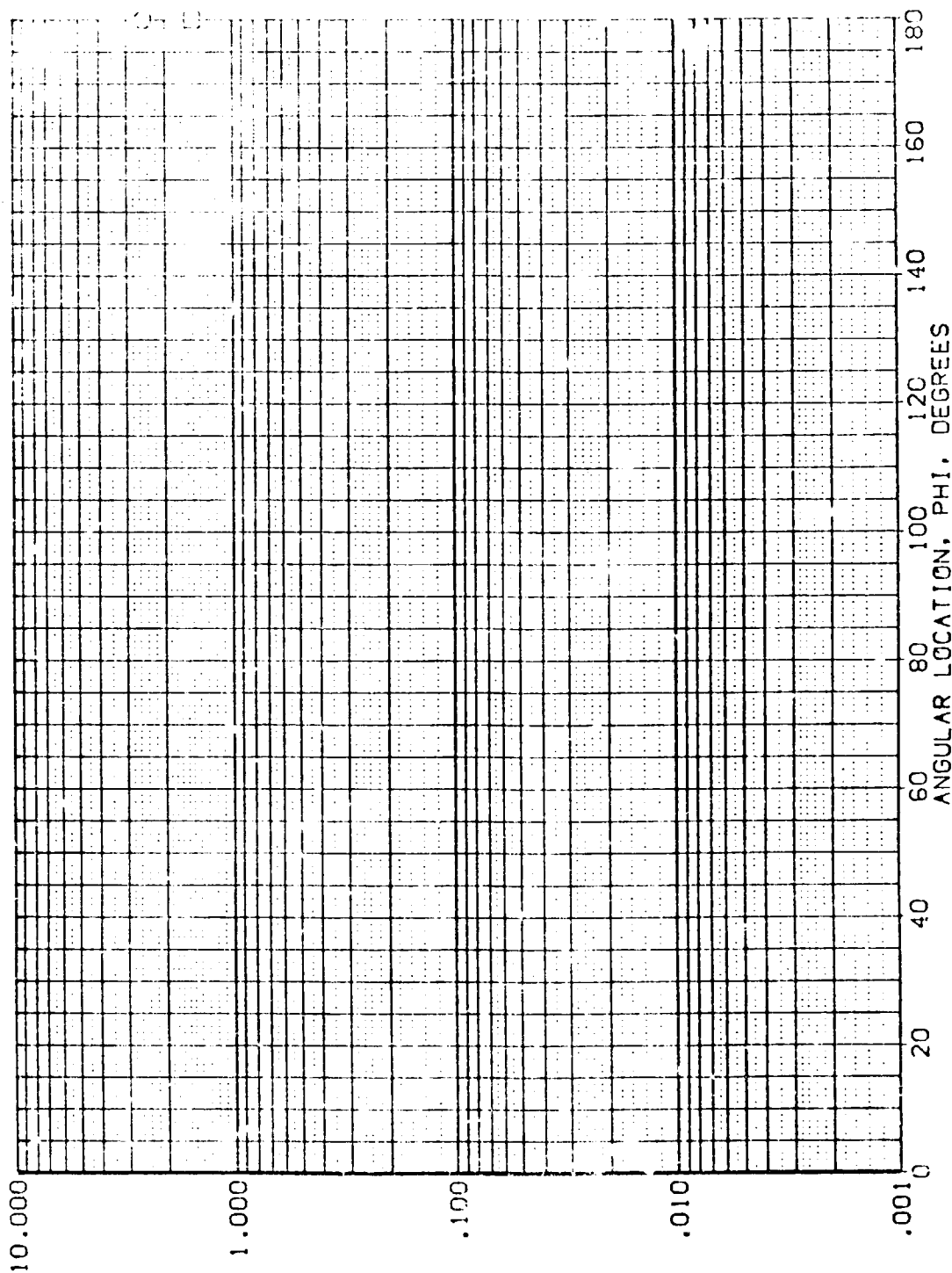


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .020

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) 8 IM:8 910C507467M3F4V5 T8
 (R0M103) IM:8 910C507467M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

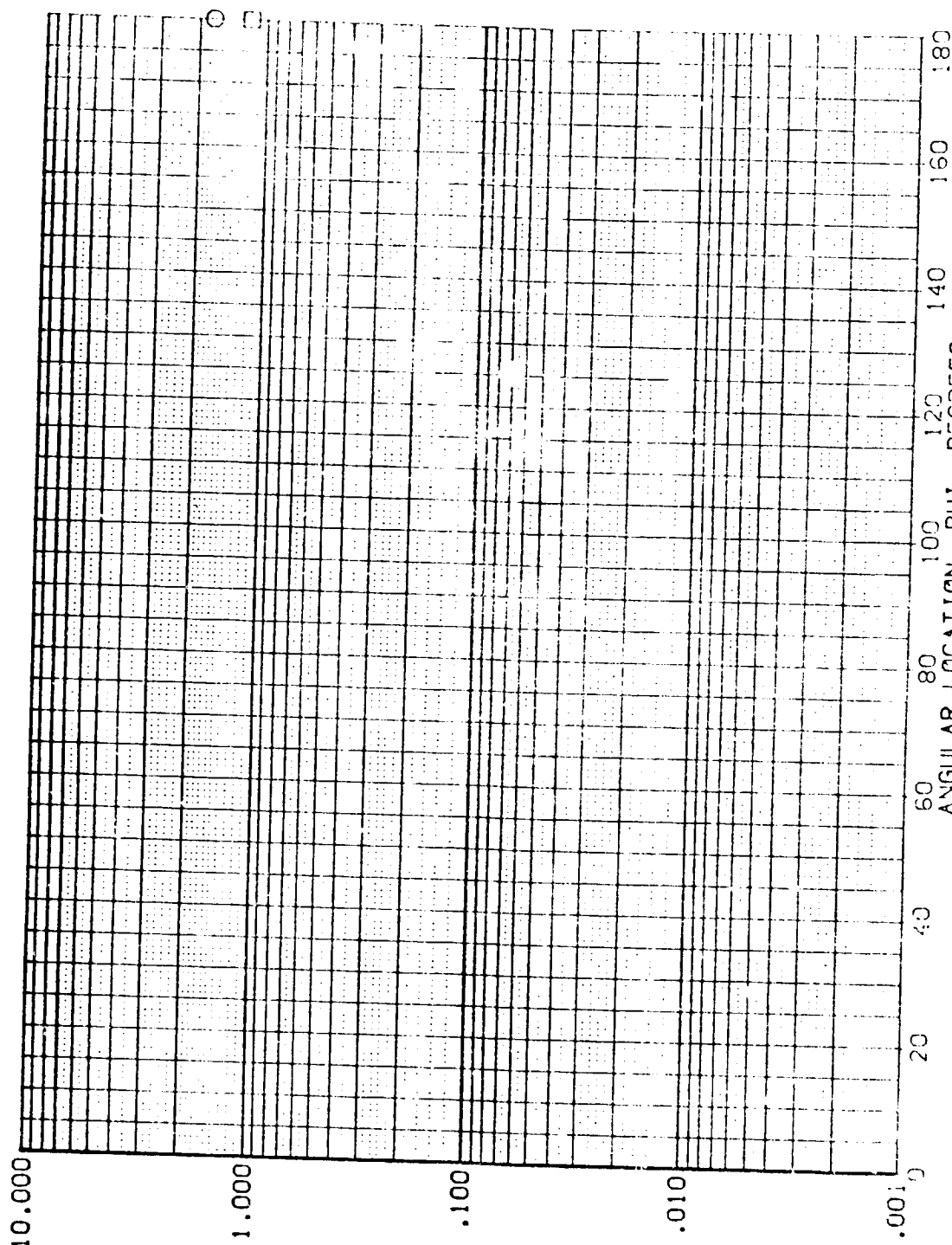


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .060

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL (RCHT02) (RCHT03) B

EXTERNAL TANK
EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000

CONFIGURATION DESCRIPTION
IH18 B10C507487M3F4V5 T8
IH18 B10C507487M3F4V5 T8

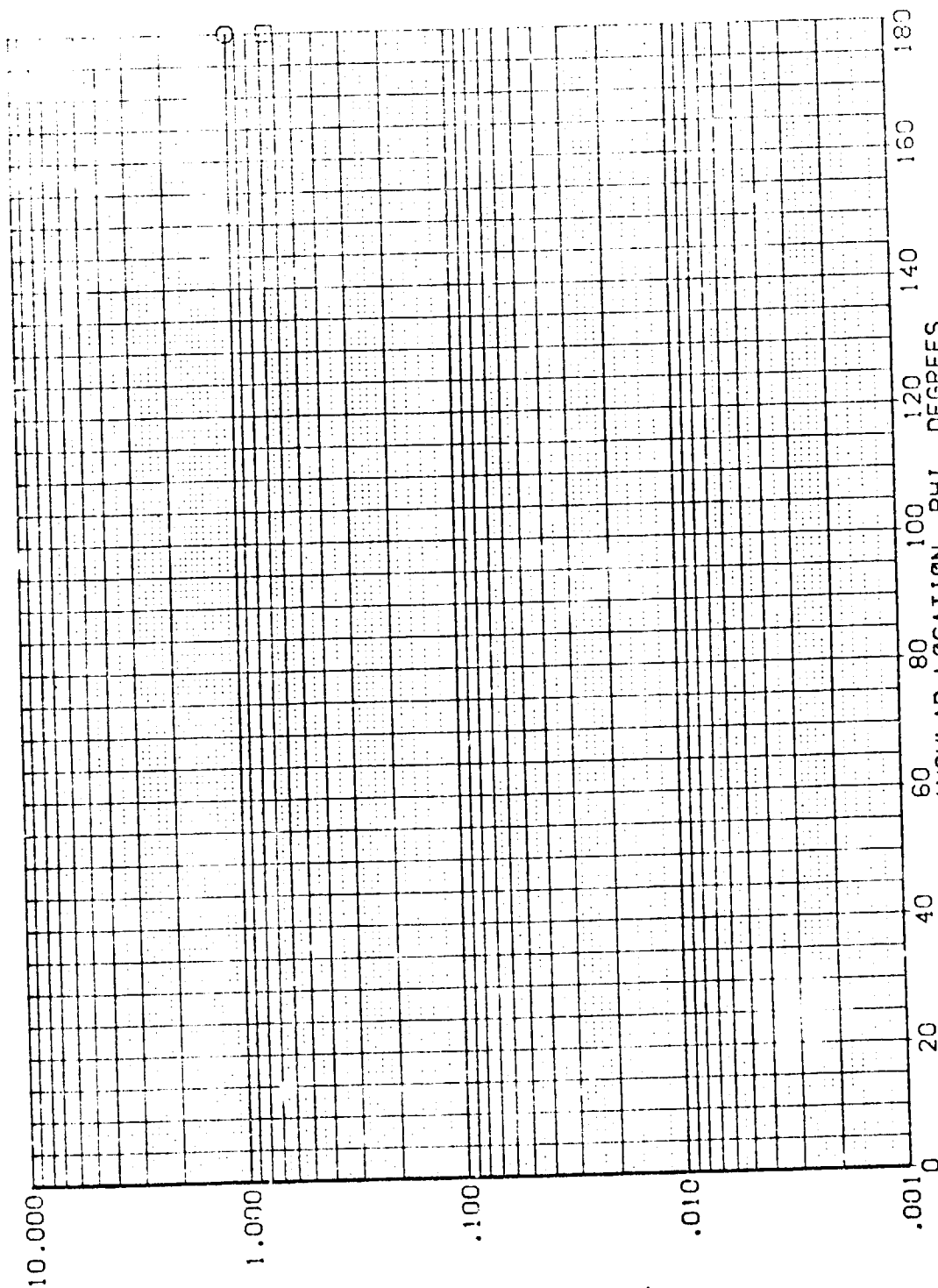


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

QN/L = 4.807 HAW/HT = .850 X/L = .100

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT02) 810C507487H3F4V5 T8
 (RMT03) 810C507487H3F4V5 T8

BETA ALPHA MACH
 .000 .000 2.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

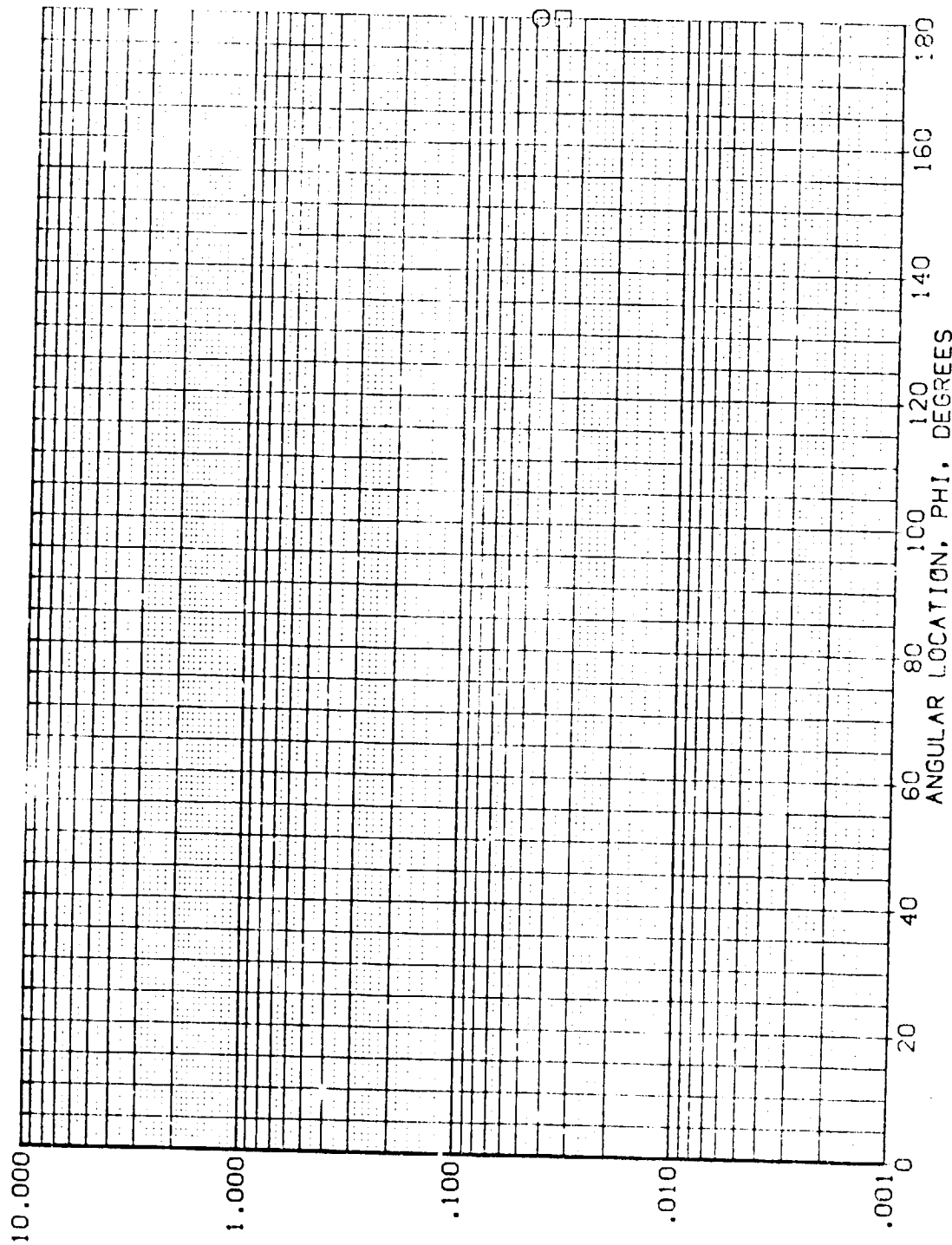


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .150

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL CONF: GURATION DESCRIPTION
(RGT02) IN18 810C507W87H3F4V5 T8
(RGT03) IN18 810C507W87H3F4V5 T8

BETA ALPHA MACH
.000 .000 6.000
-5.000 6.000

EXTERNAL TANK
EXTERNAL TANK

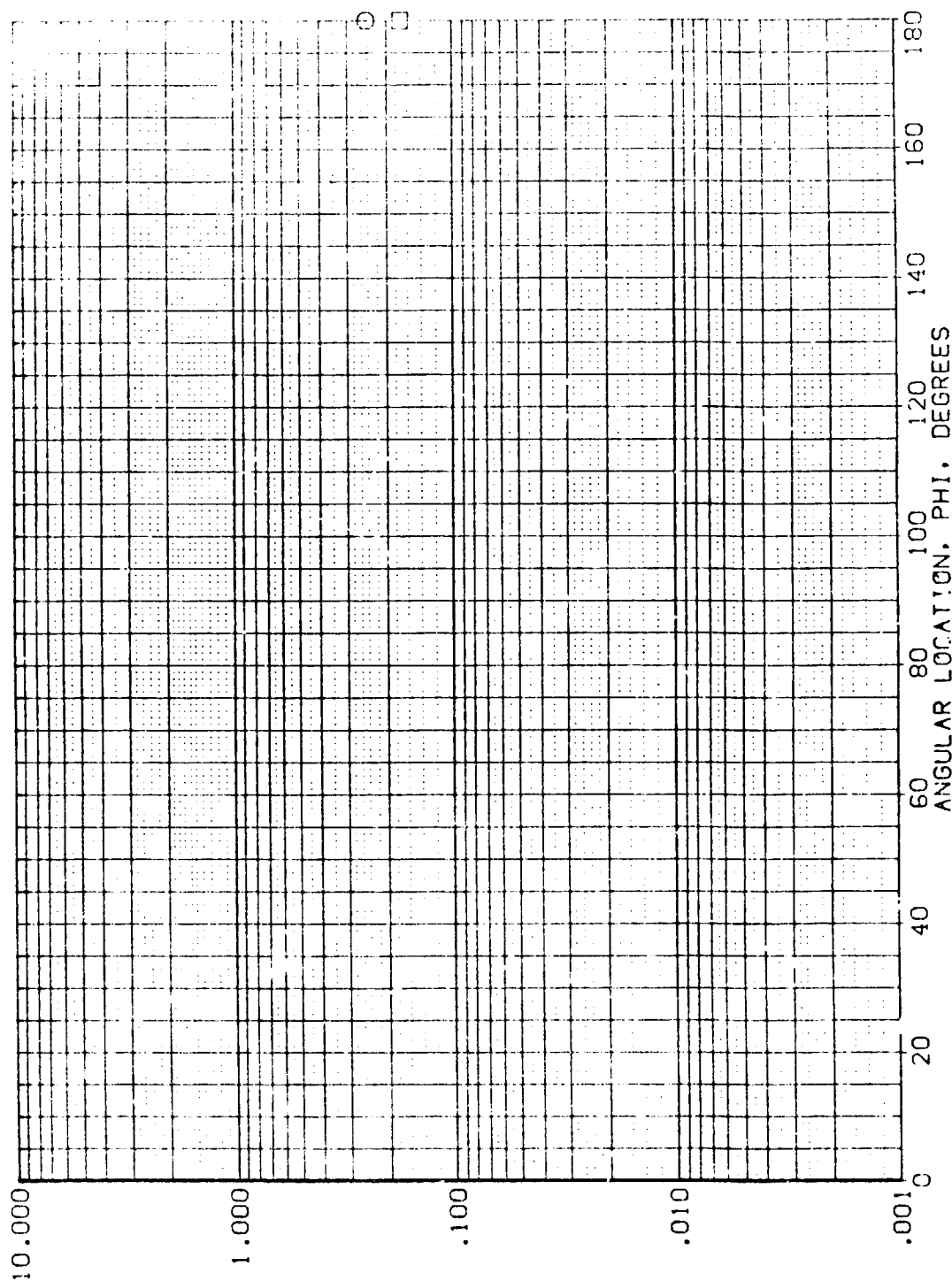


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MTC2) B 1M18 B10C5D7W87M3F4V5 T8
 (R0MTC3) 1M18 B10C5D7W87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

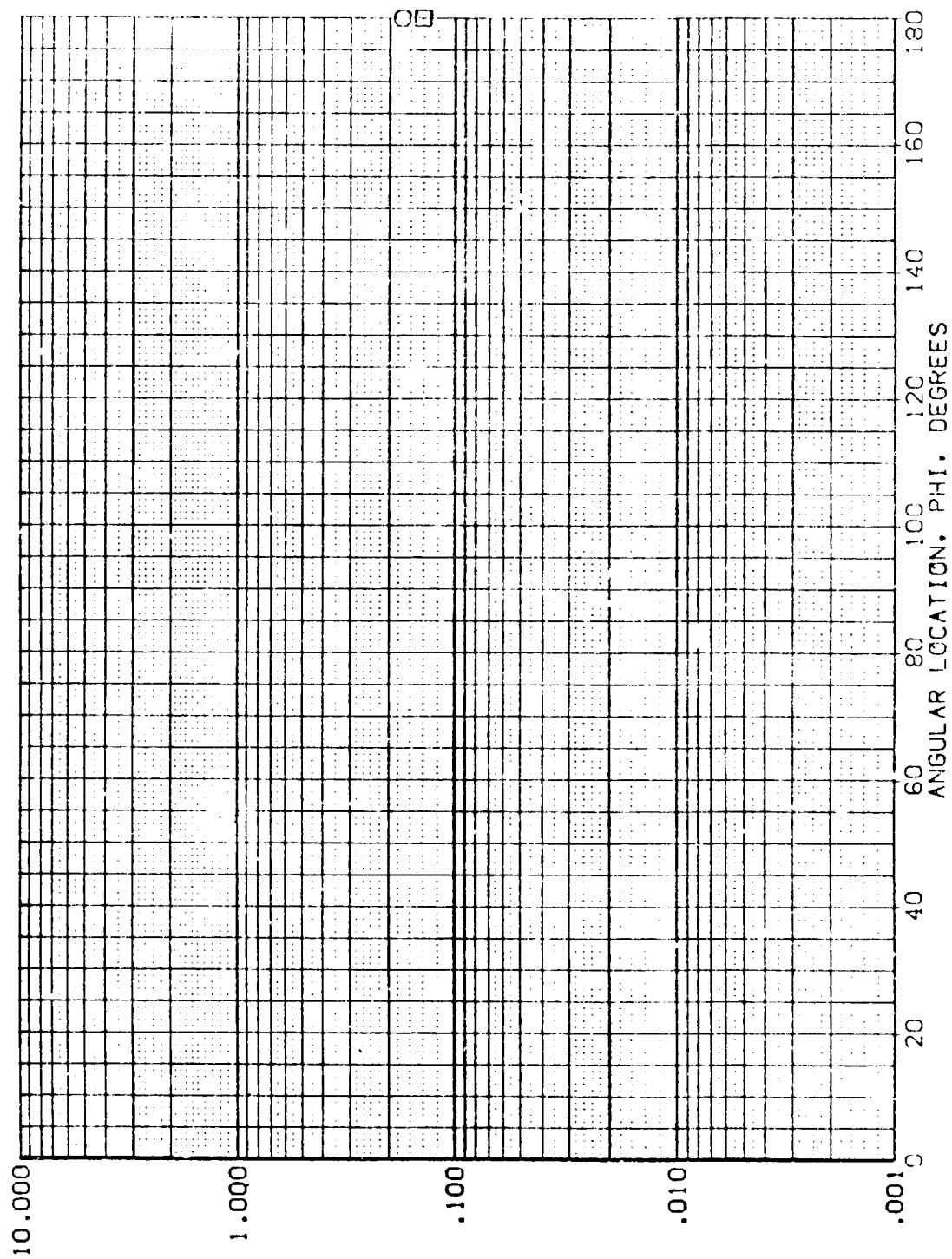


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .250

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL ☐ (RCHT02) ☐ (RCHT03)

CONFIGURATION DESCRIPTION
JH18 B10C507W8743FAV5 T8
JH18 B10C507W8743FAV5 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

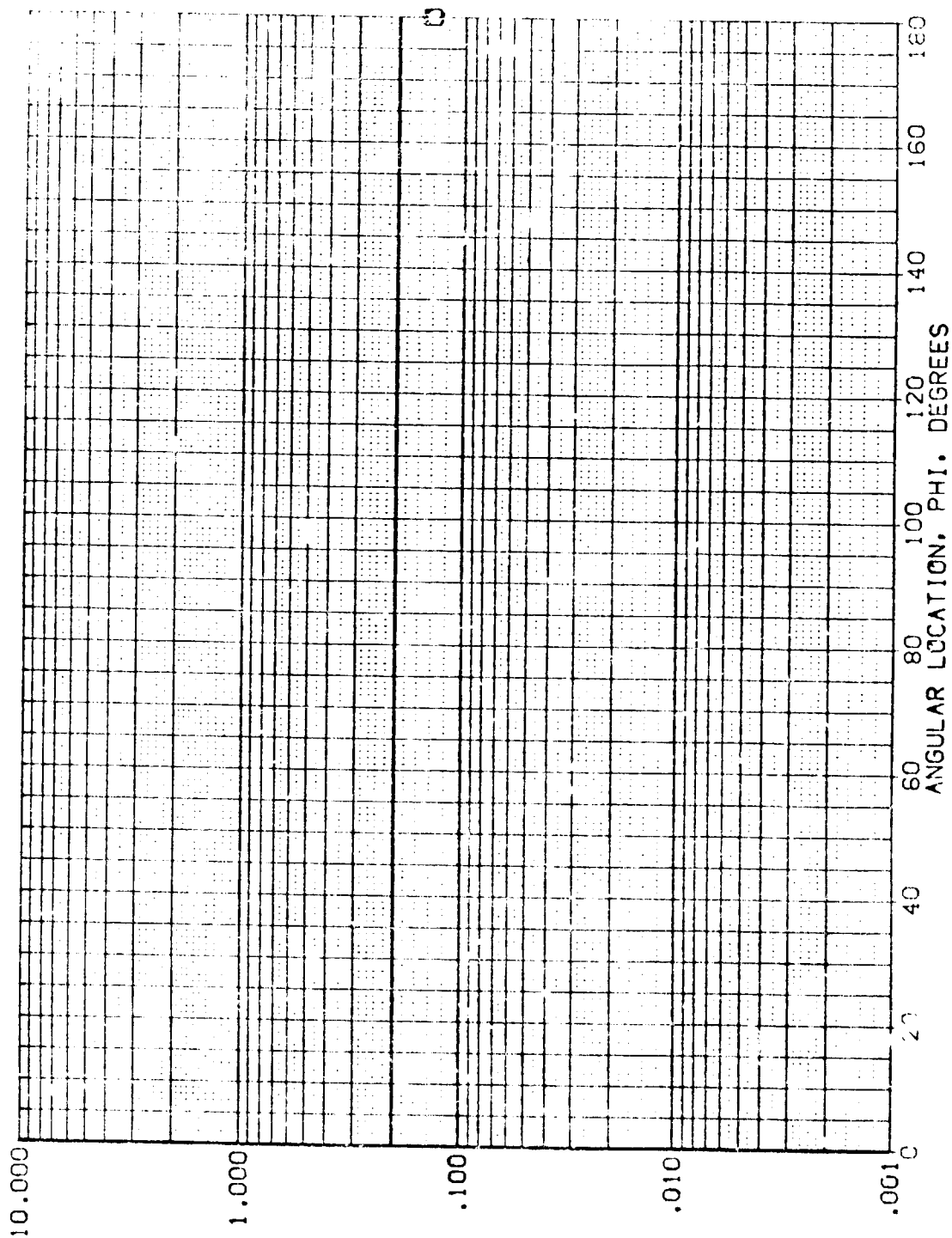


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .300

DATA SET SYMBOL
(R0M02)
(R0M03)

CONFIGURATION DESCRIPTION
IH18 810C5D7W87M3F4V5 T8
IH18 810C5D7W87M3F4V5 T8

BETA .000
ALPHA .000
MACH 6.000

EXTERNAL TANK
EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

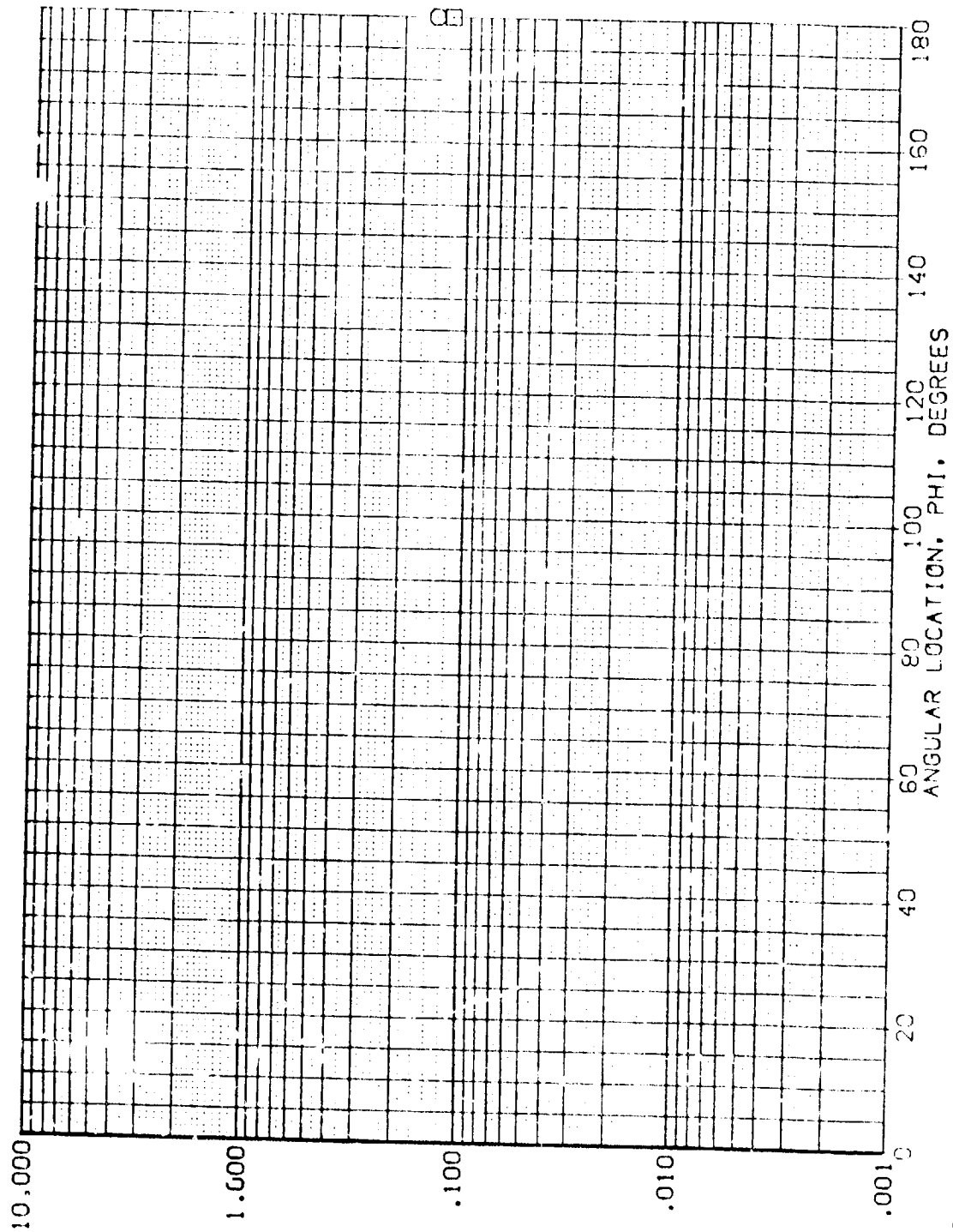


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 h_{AW}/h_{TE} = .650 X/L = .350

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL
(RQMT02) 8
(RQMT03)

CONFIGURATION DESCRIPTION
IH18 810C507W87M3F4V5 T8
IH18 810C507W87M3F4V5 T9

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

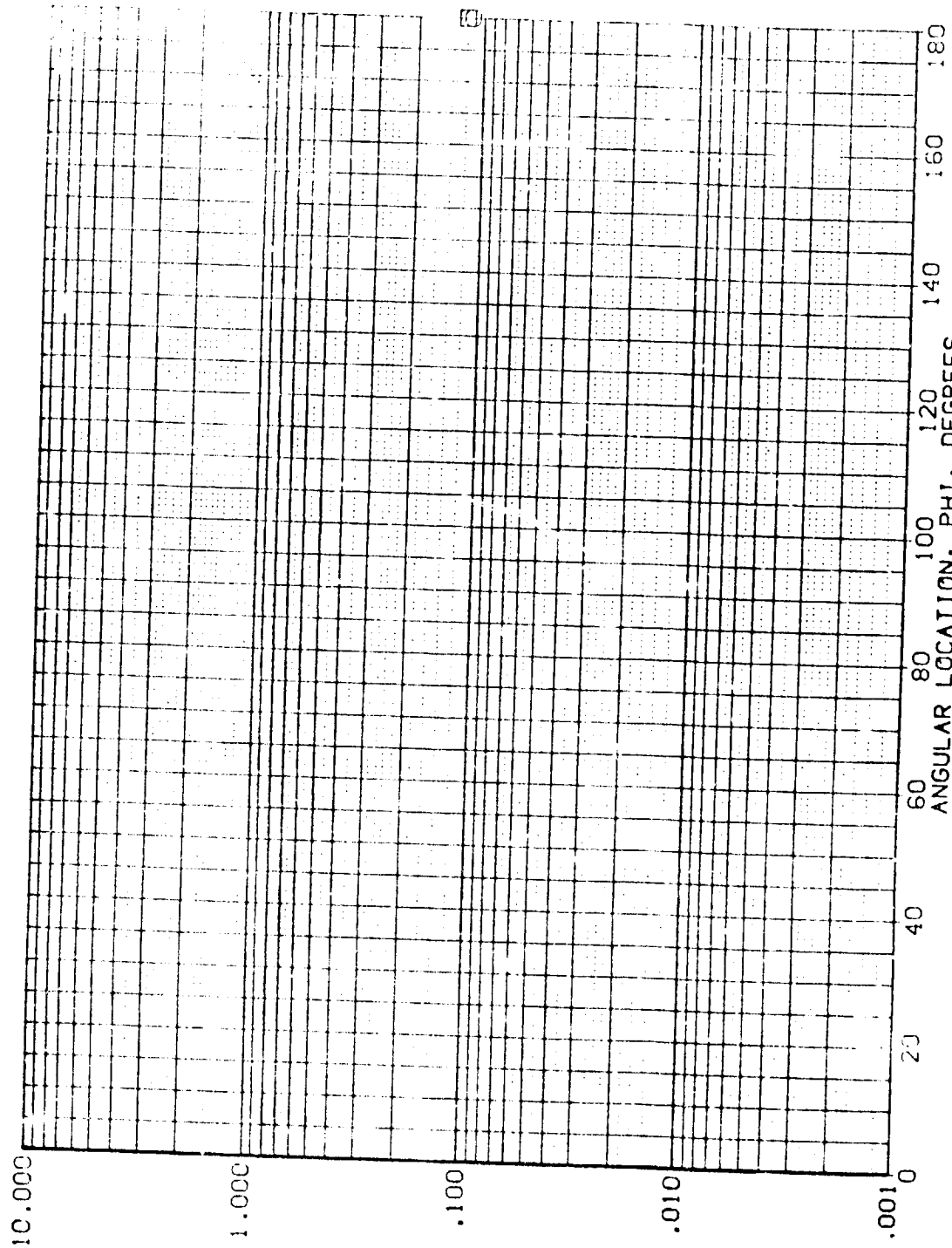


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/PT = .850 X/L = .375

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) B IH18 B10C5D7W87M3F4V5 T8
 (R0MT03) B IH18 B10C5D7W87M3F4V5 T8

EXTERNAL TANK ALPHA MACH
 EXTERNAL TANK .070 6.000
 .000 6.000
 -5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

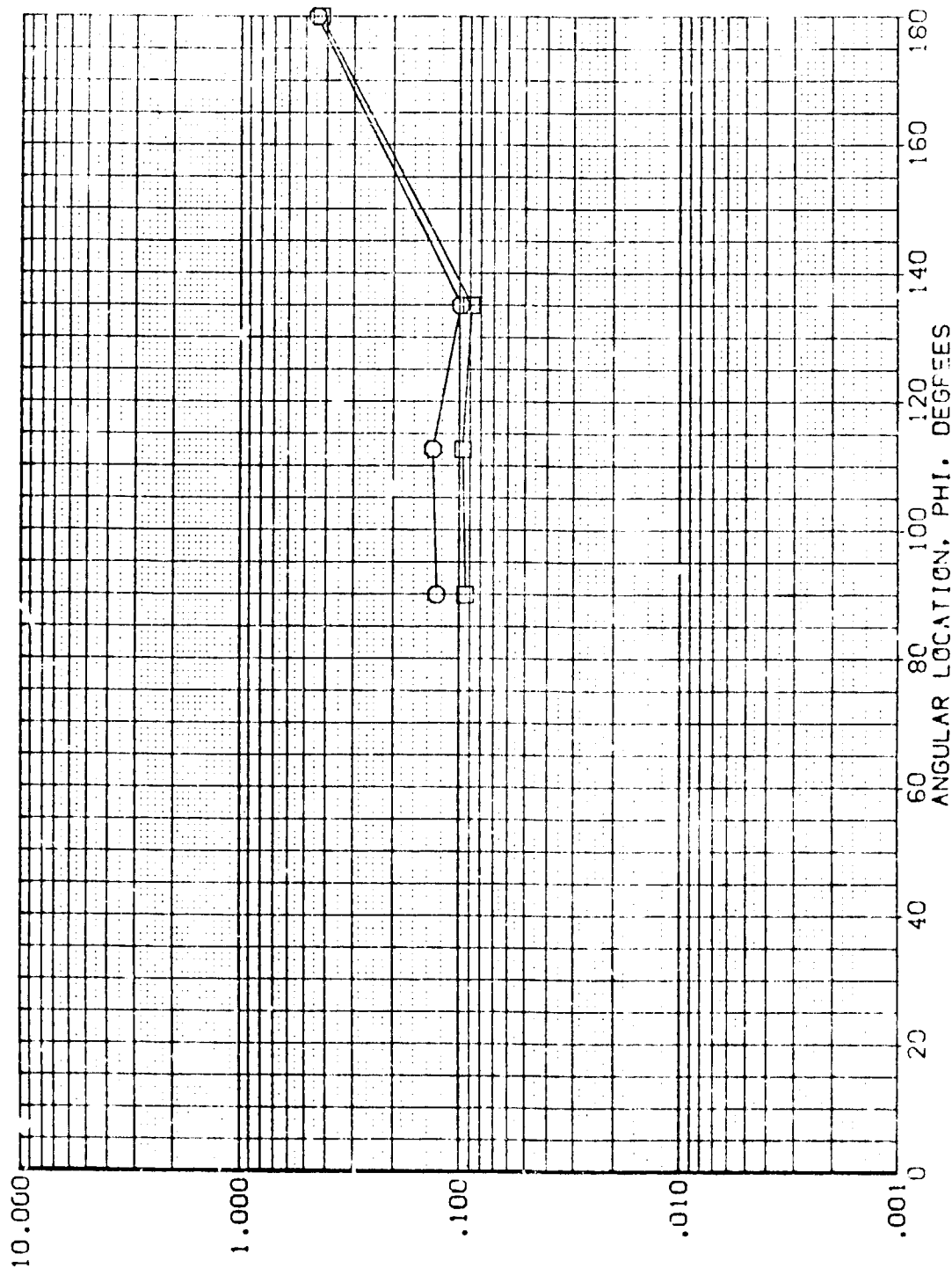


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) [] I118 B10C507487H3F4V5 T8
 (RQMT03) [] I118 B10C507487H3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/REF

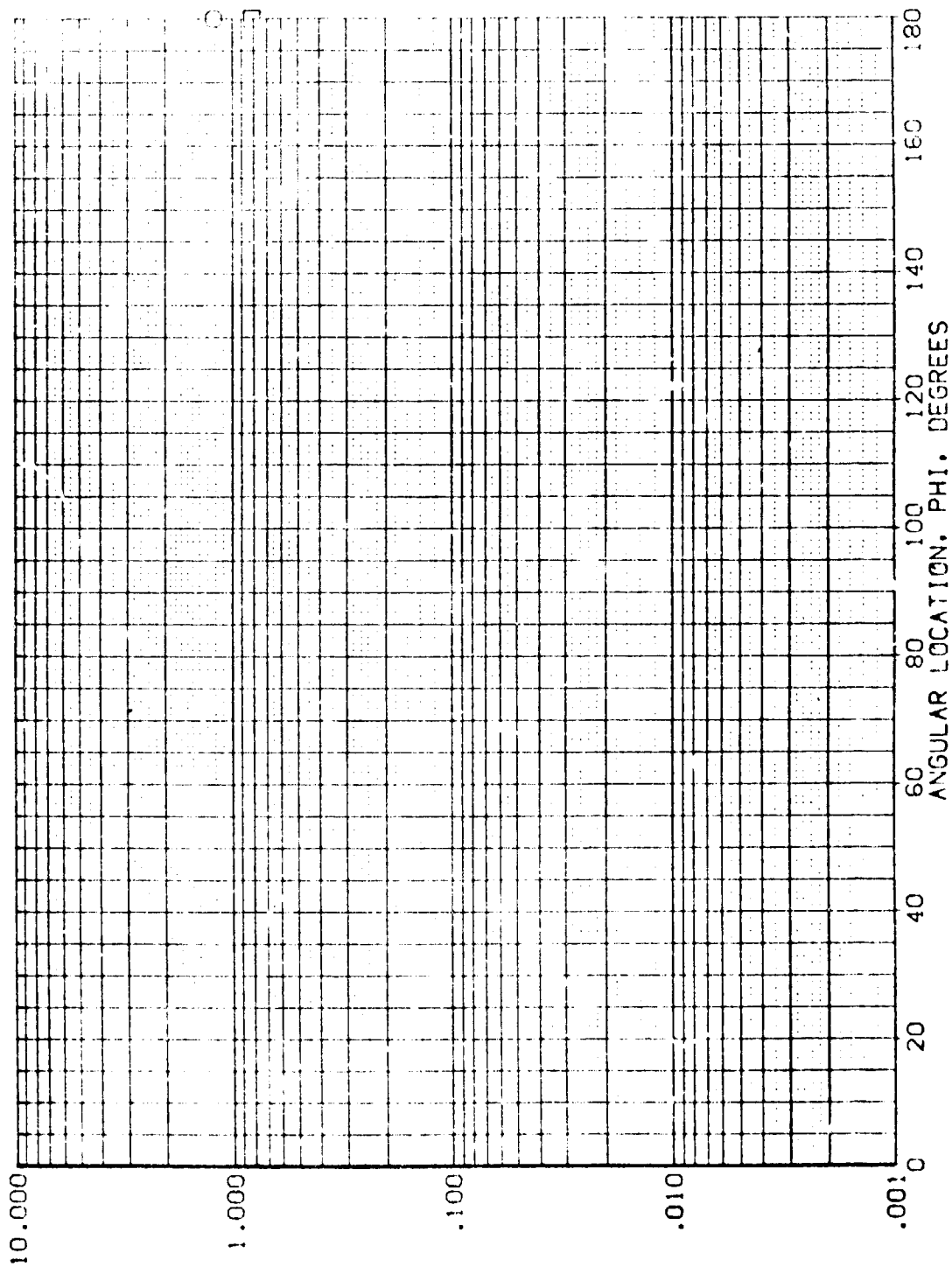


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .425

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) ☐ I118 B10C507487M3F4V5 T8
 (R0M103) ☐ I118 B10C507487M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

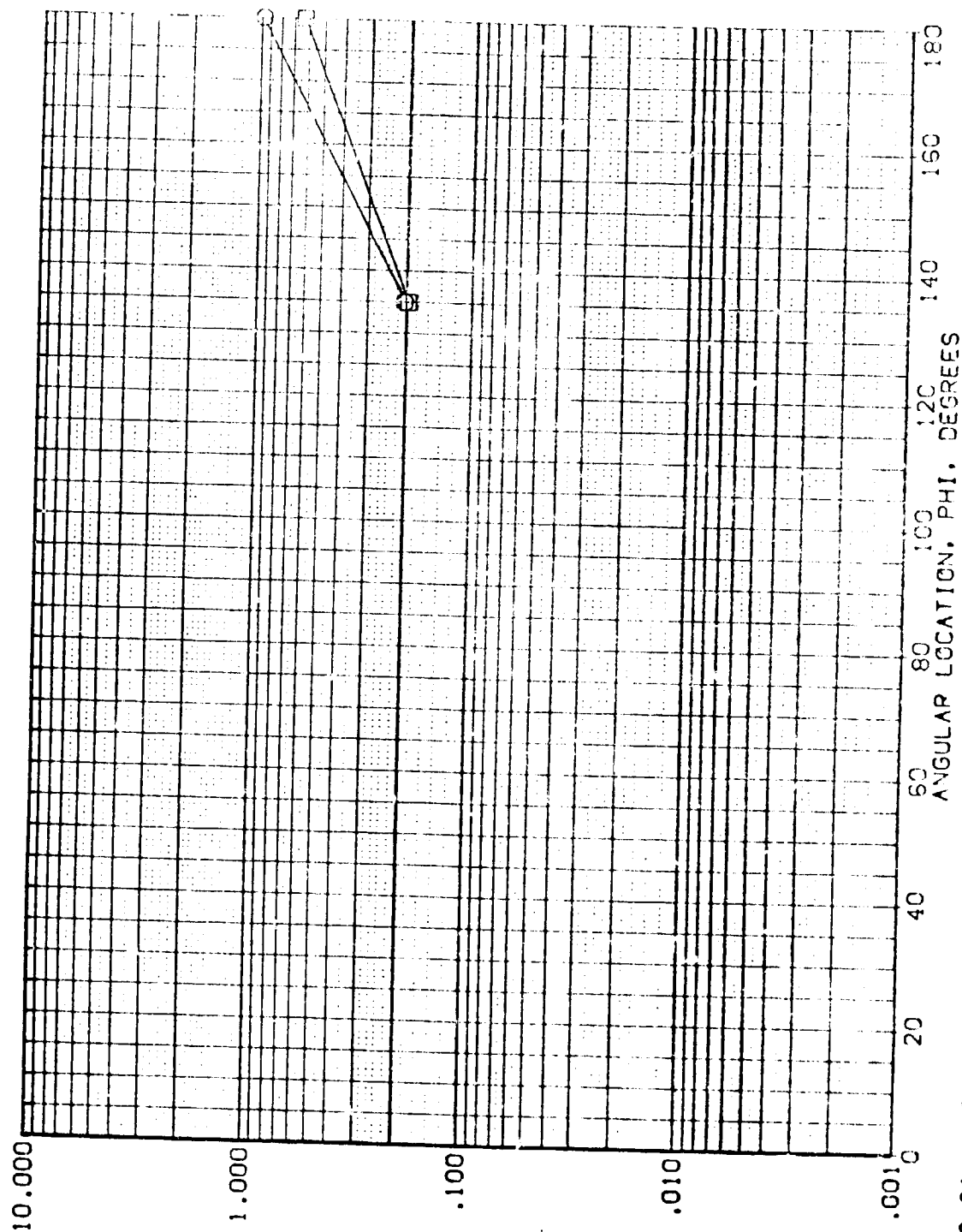



FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAY/HT = .950 X/L = .450

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL (R0MT02) (R0MT03)  CONFIGURATION DESCRIPTION
 IM18 B10C507V87M3F4V5 IR
 IM18 B10C507V87M3F4V5 TB

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 ALPHA .000
 MACH 6.000
 MACH 6.000

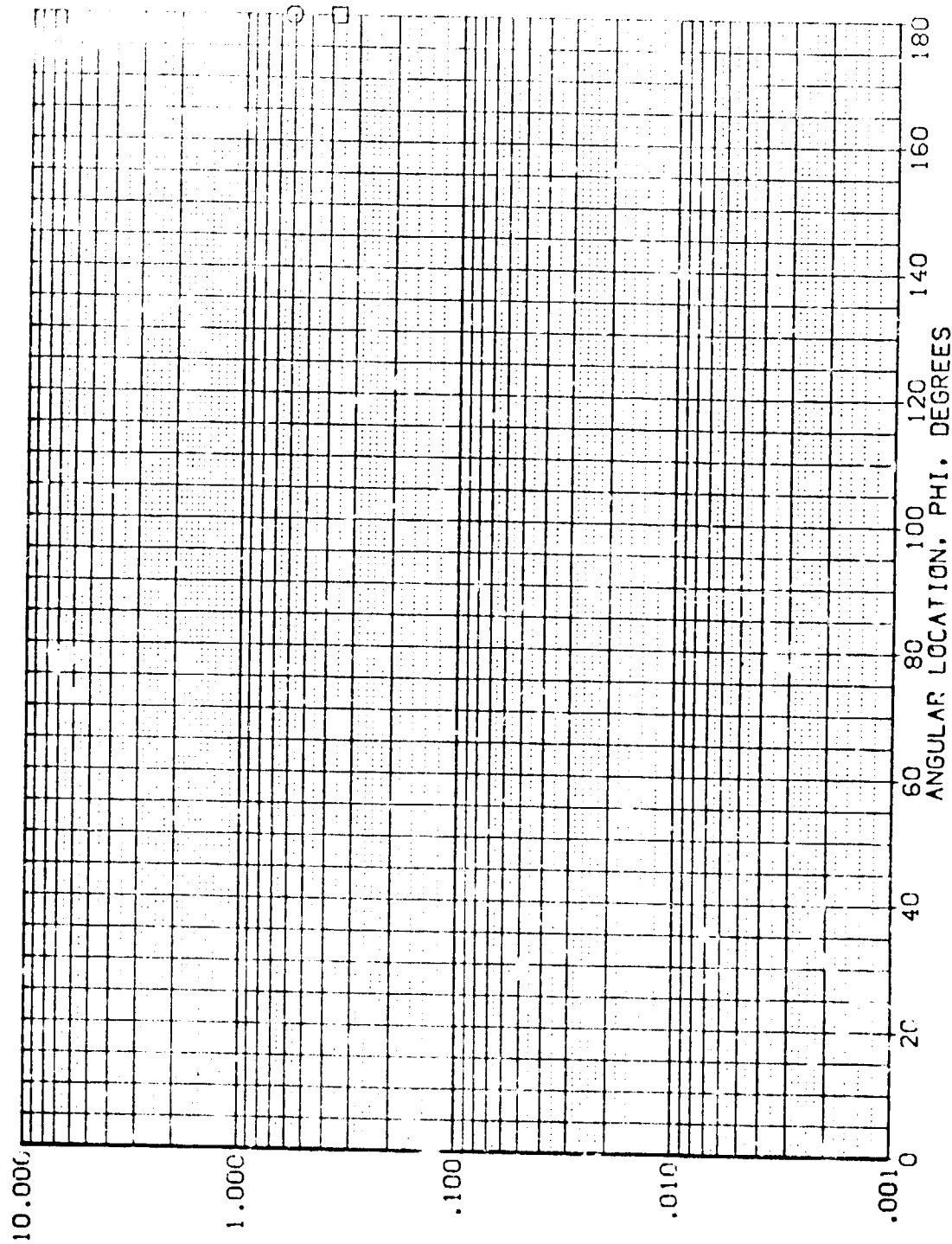


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO IRIPS

RN/L = 4.807 $h_{AW}/h_T = .850$ $X/L = .475$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT02) ☐ I118 B10CSD7W87H3F4V5 T8
 (R0HT03) ☐ I118 B10CSD7W87H3F4V5 T8

EXTERNAL TANK EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

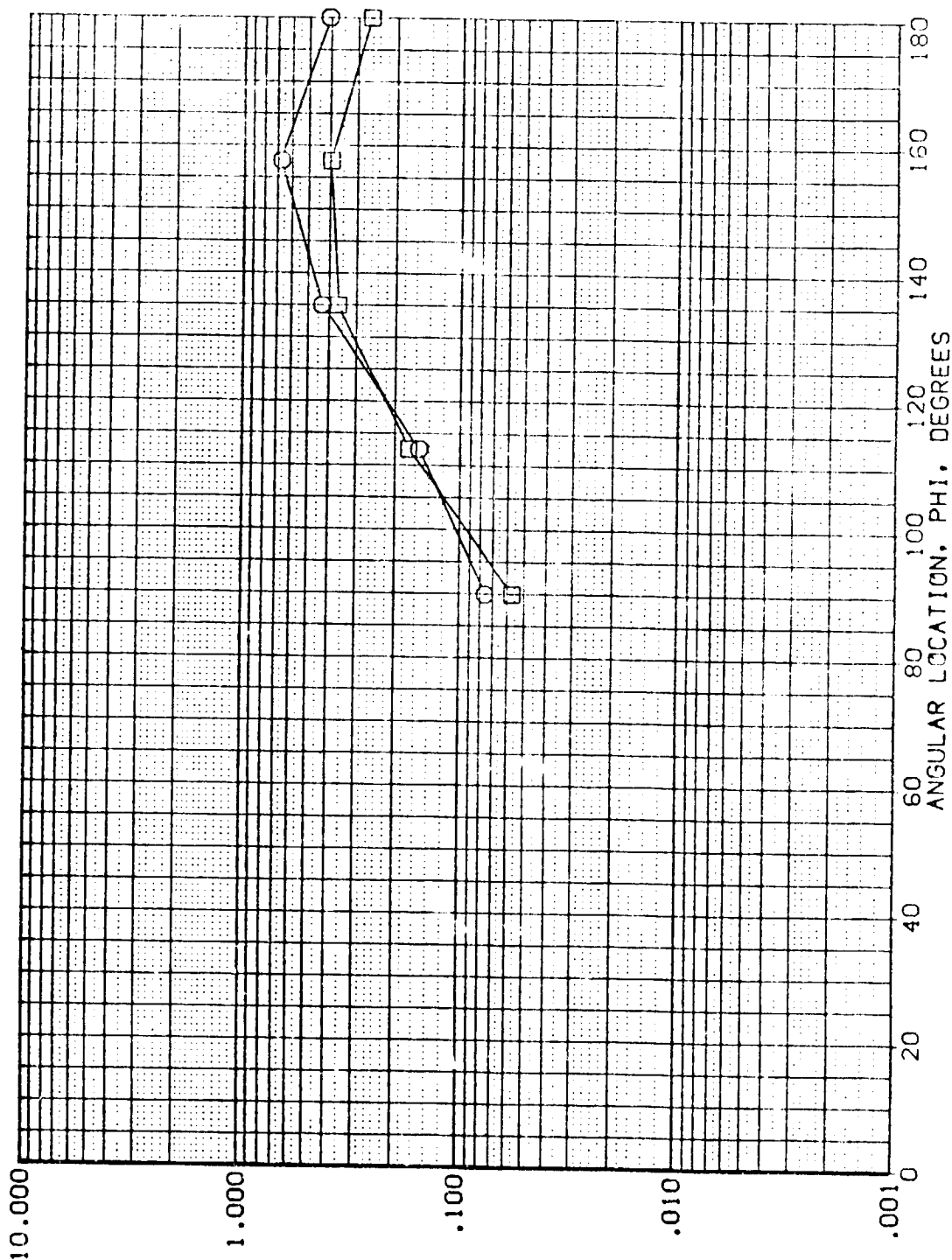


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .500

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) IHI8 810C507487M3F4V5 T8
 (R0MT03) IHI9 810C507487M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

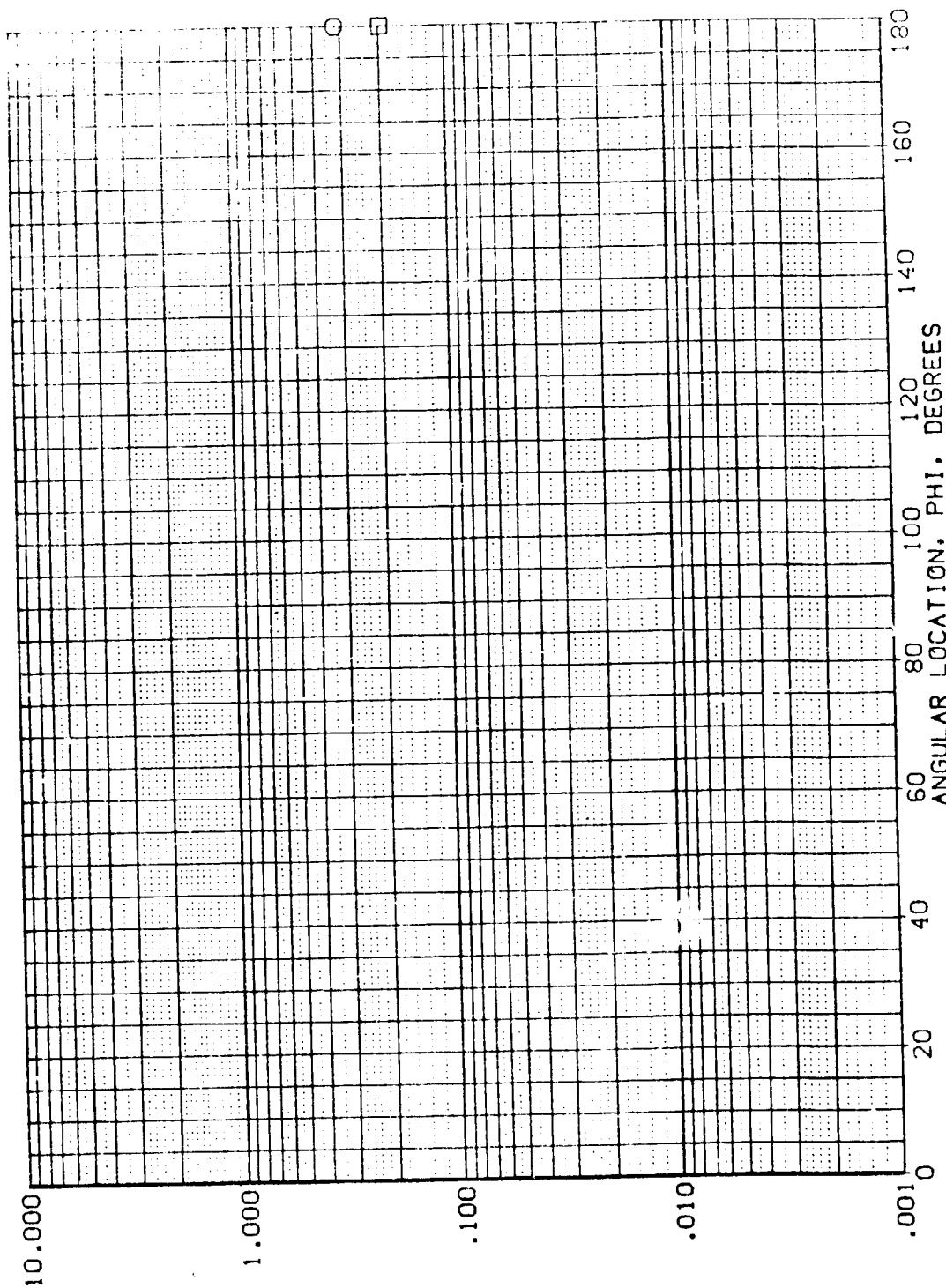


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .525

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) □ IM18 B10C507487M3F4V5 T8
 (RQMT03) □ IM18 B10C507487M3F4V5 T3

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 5.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

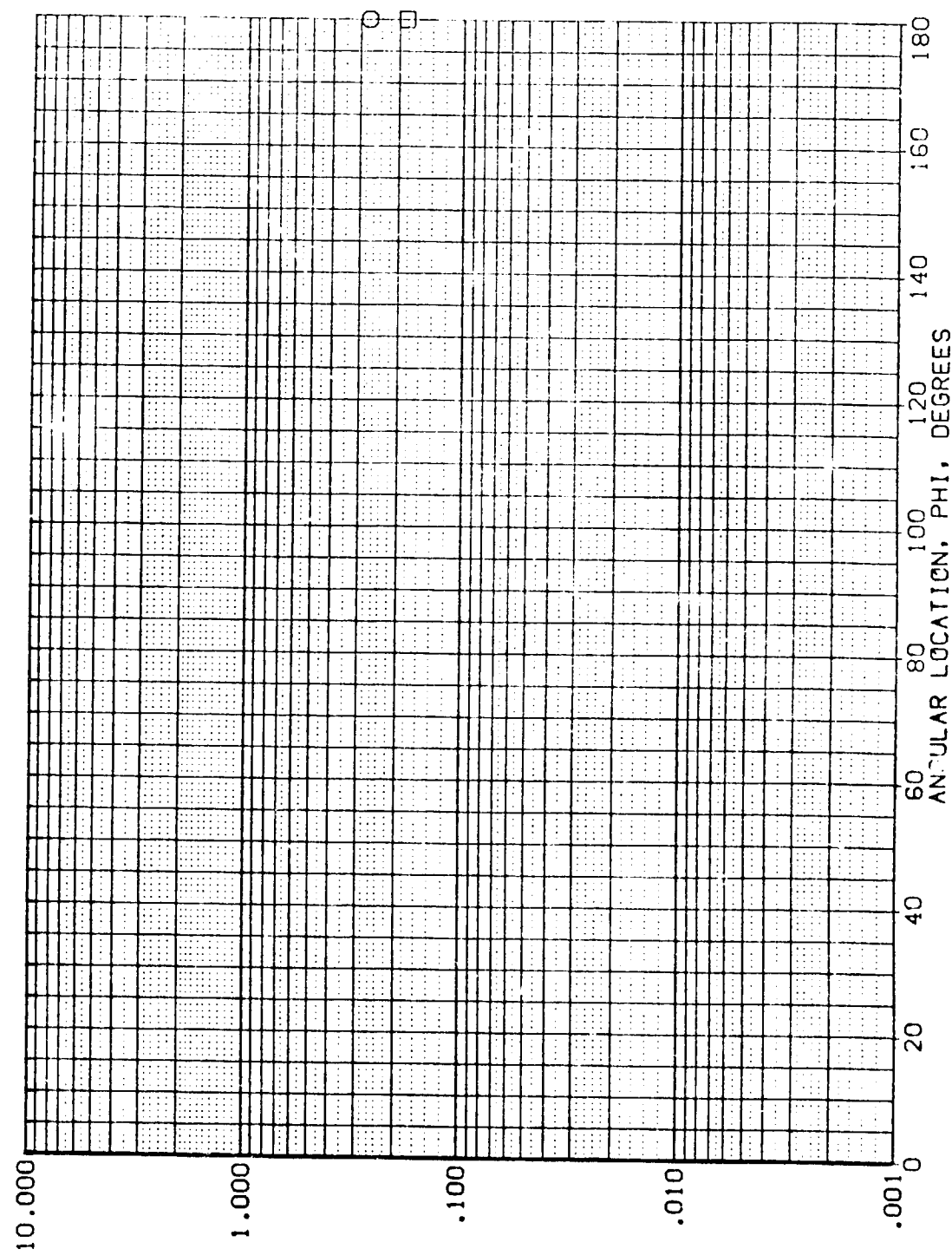


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .550

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) B 1M18 810C5D7W87M3F4V5 T8
 (R0M103) B 1M18 810C5D7W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

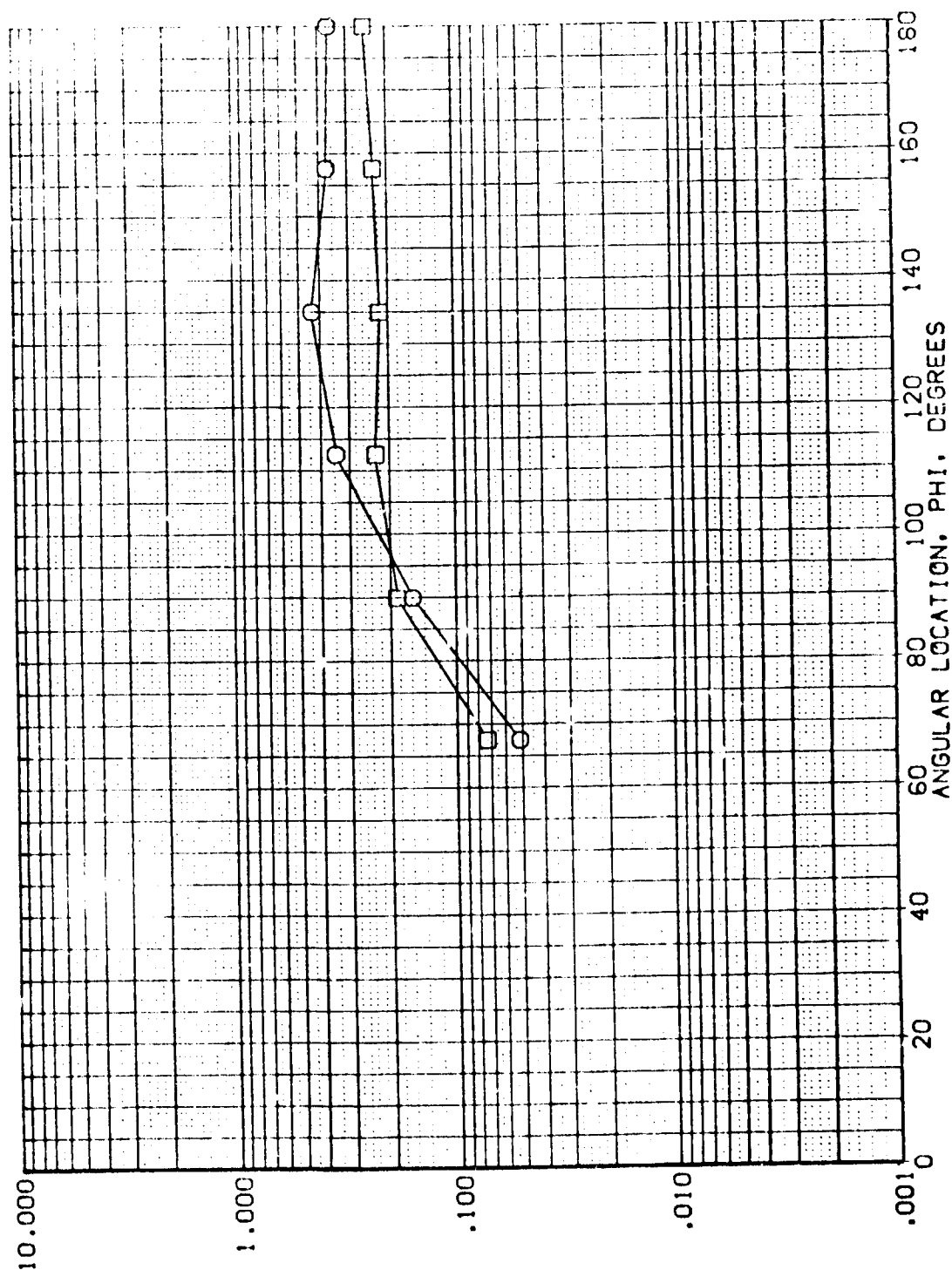


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) 810C507V87M3F4V5 T8
 (R0MT03) 810C507V87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000
 ALPHA .000
 MACH 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

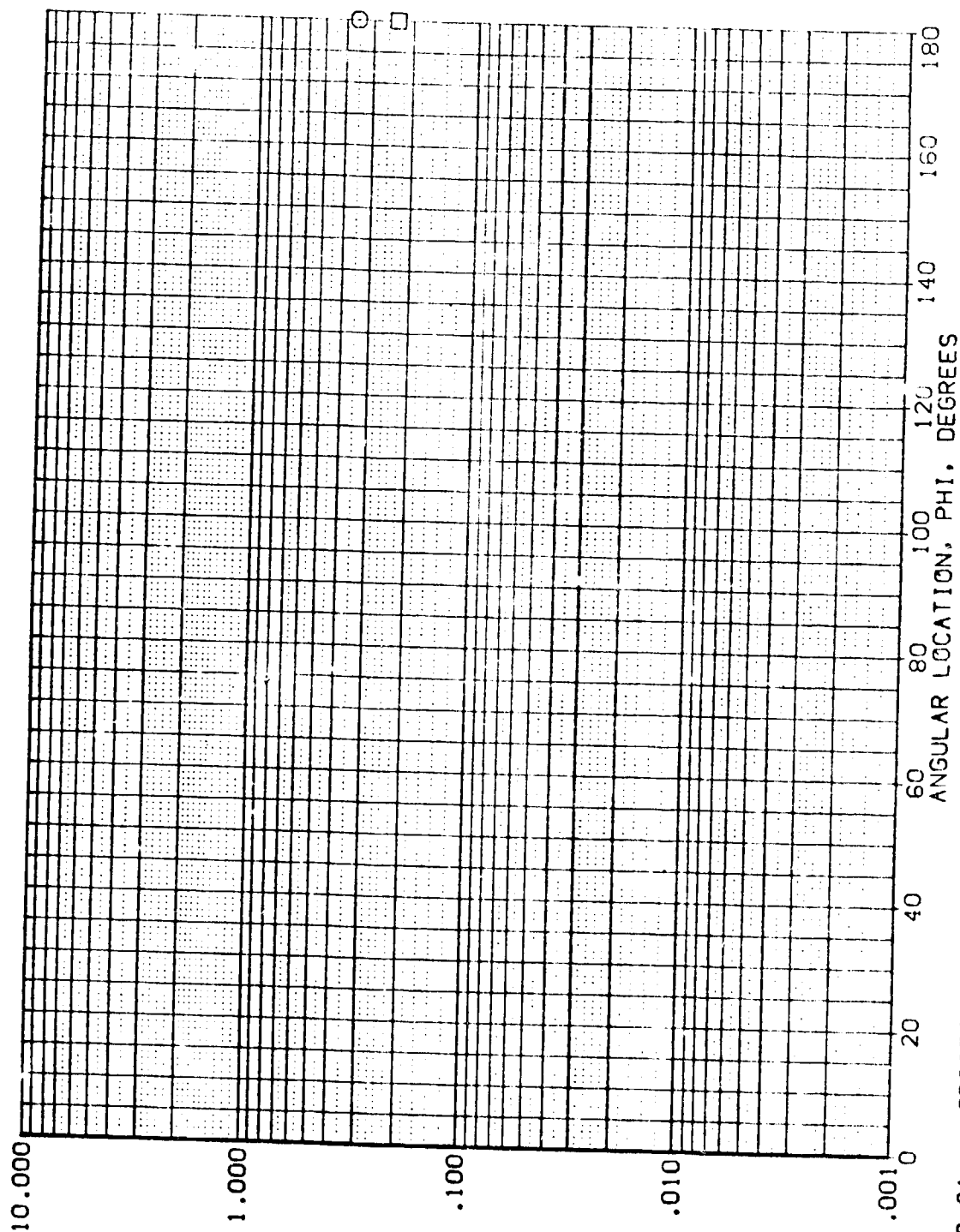


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .650

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) IM18 B10C5D7W87M3F4V5 T8
 (RQMT03) IM18 B10C5D7W87M3F4V5 T8

EXTERNAL TANK BETA ALPHA MACH
 EXTERNAL TANK .000 .000 6.000
 EXTERNAL TANK .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

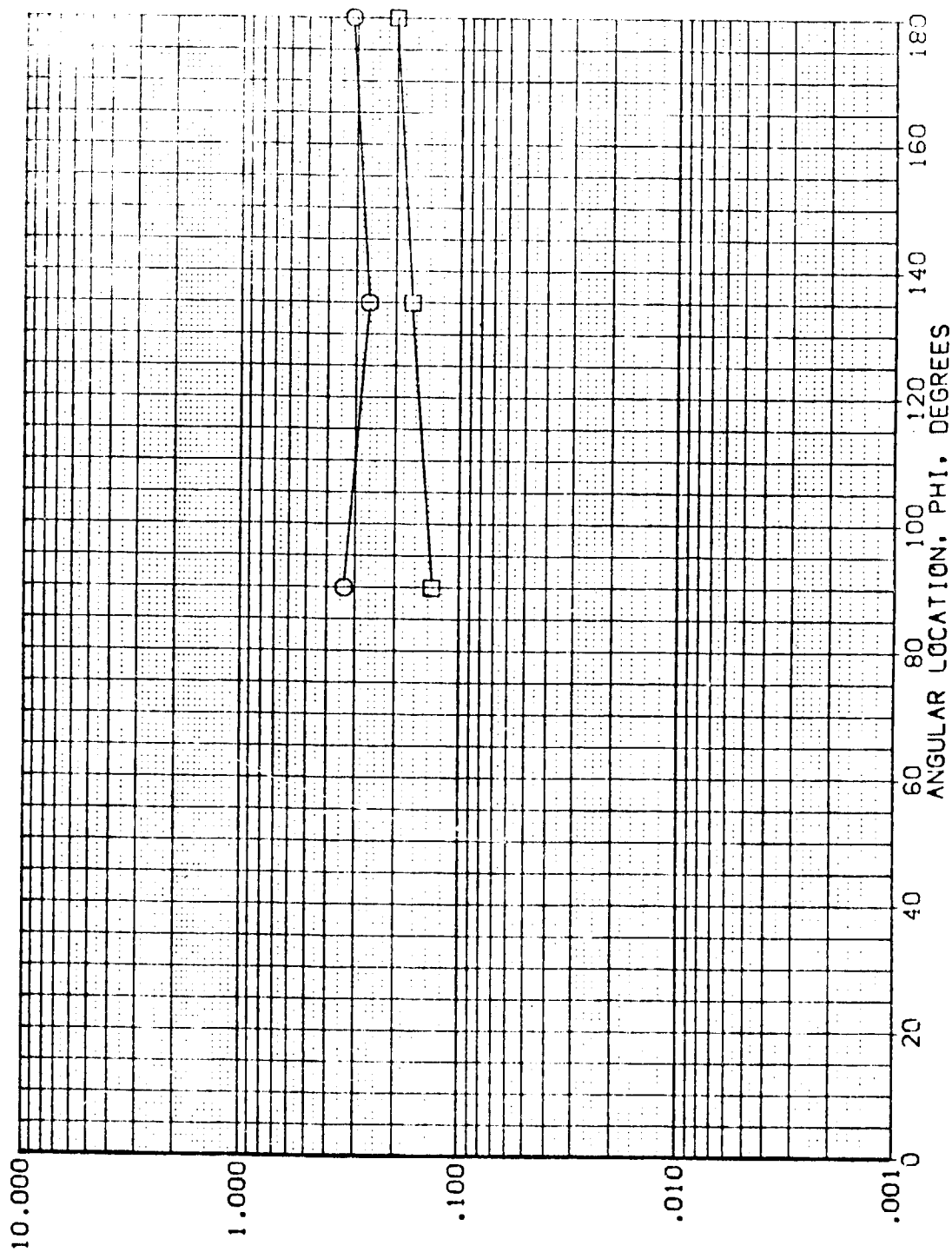


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .700

DATA SET SYMBOL
(R0M102)
(R0M103)

CONFIGURATION DESCRIPTION
1M18 810C507W87M3F4V5 T8
1M18 810C507W87M3F4V5 T8

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

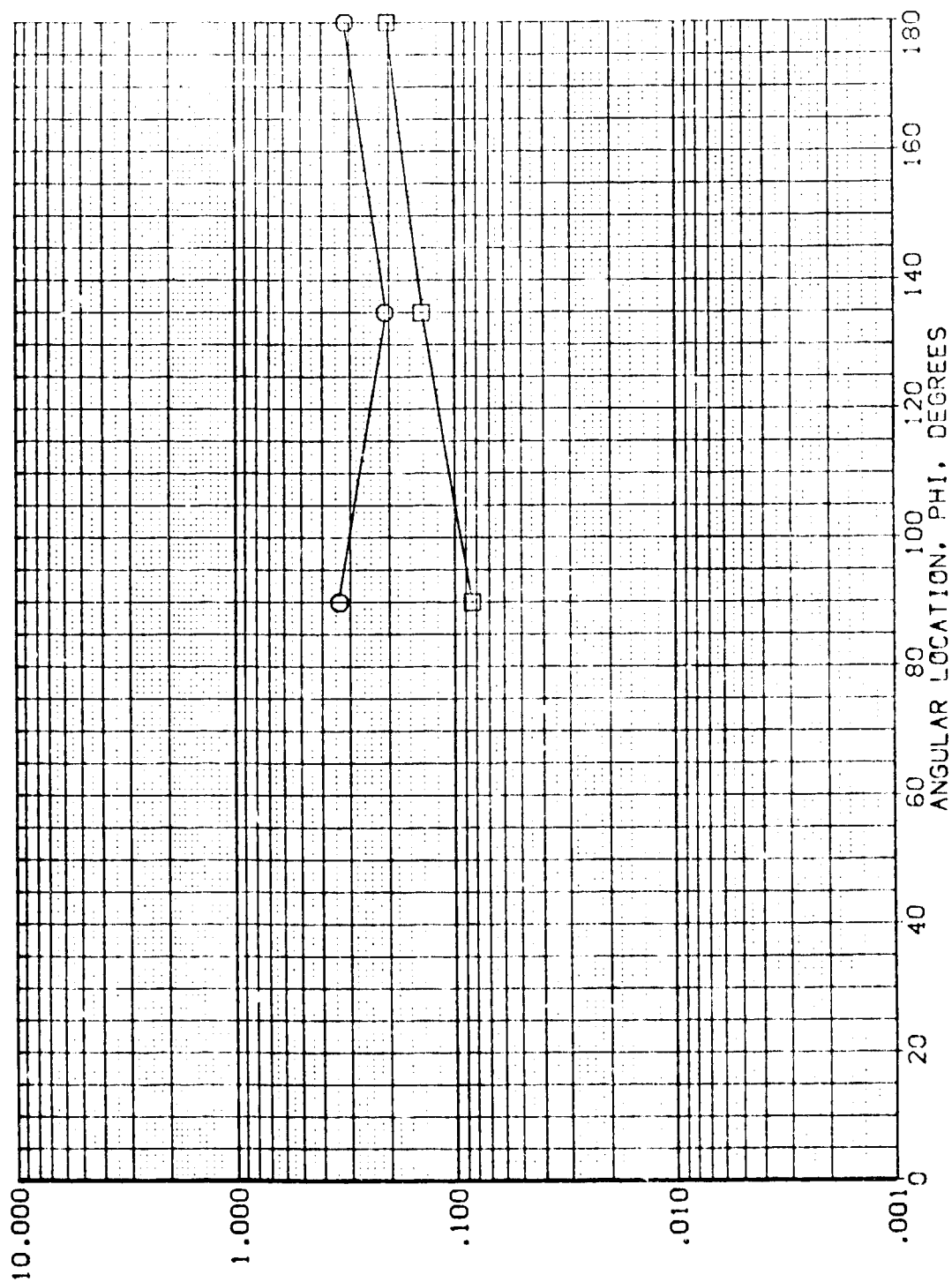



FIG 21 CRBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .800

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL
(R0M102) 
(R0M103)

CONFIGURATION DESCRIPTION
IH18 B10C5D7487M3F4V5 T8
IH18 B10C5D7487M3F4V5 T8

EXTERNAL TANK
EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000

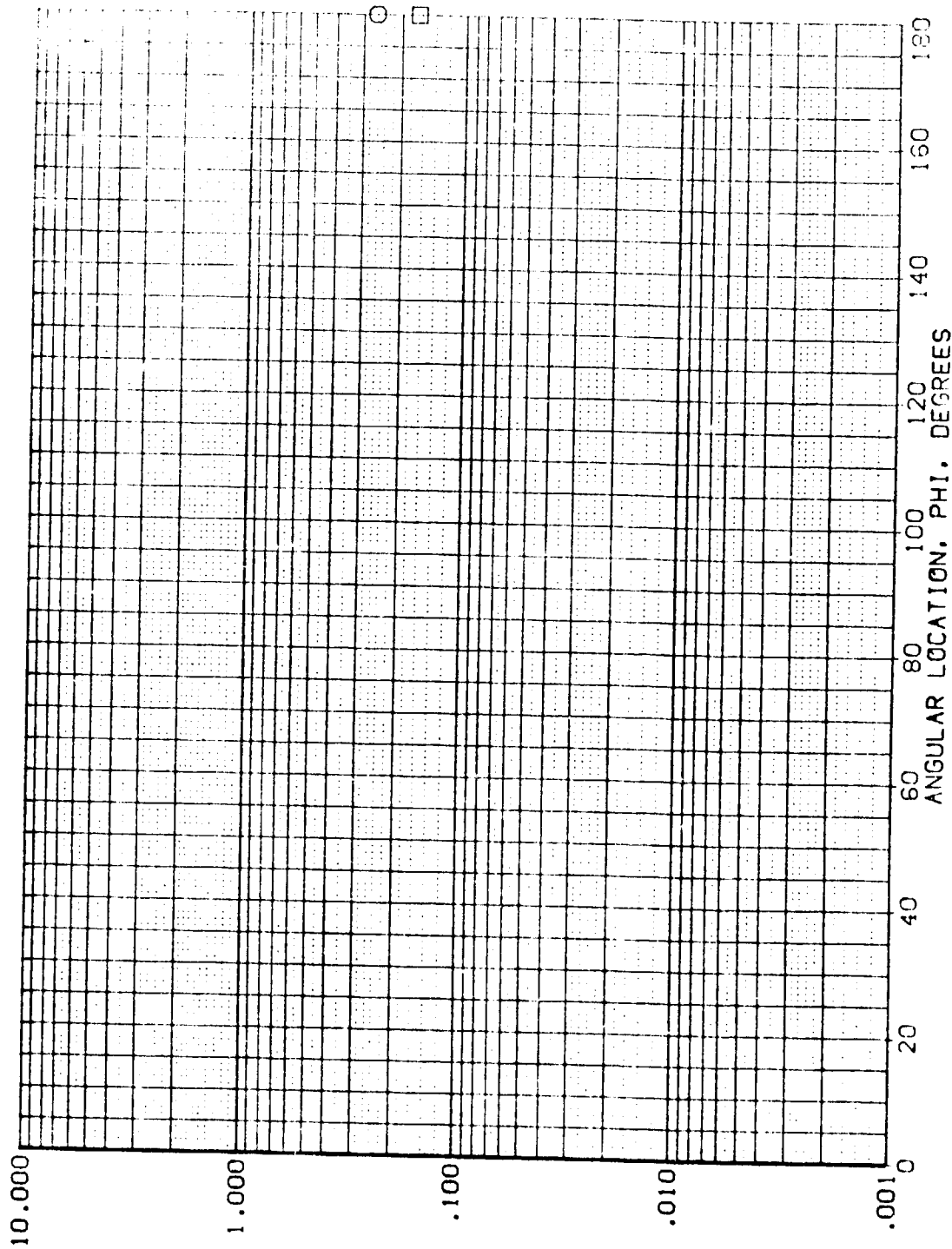


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = .850 X/L = .900

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) B IM18 B10C507487M3F4V5 T8
 (RQMT03) B IM18 B10C507487M3F4V5 T8

EXTERNAL TANK ALPHA MACH
 EXTERNAL TANK .000 6.000
 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

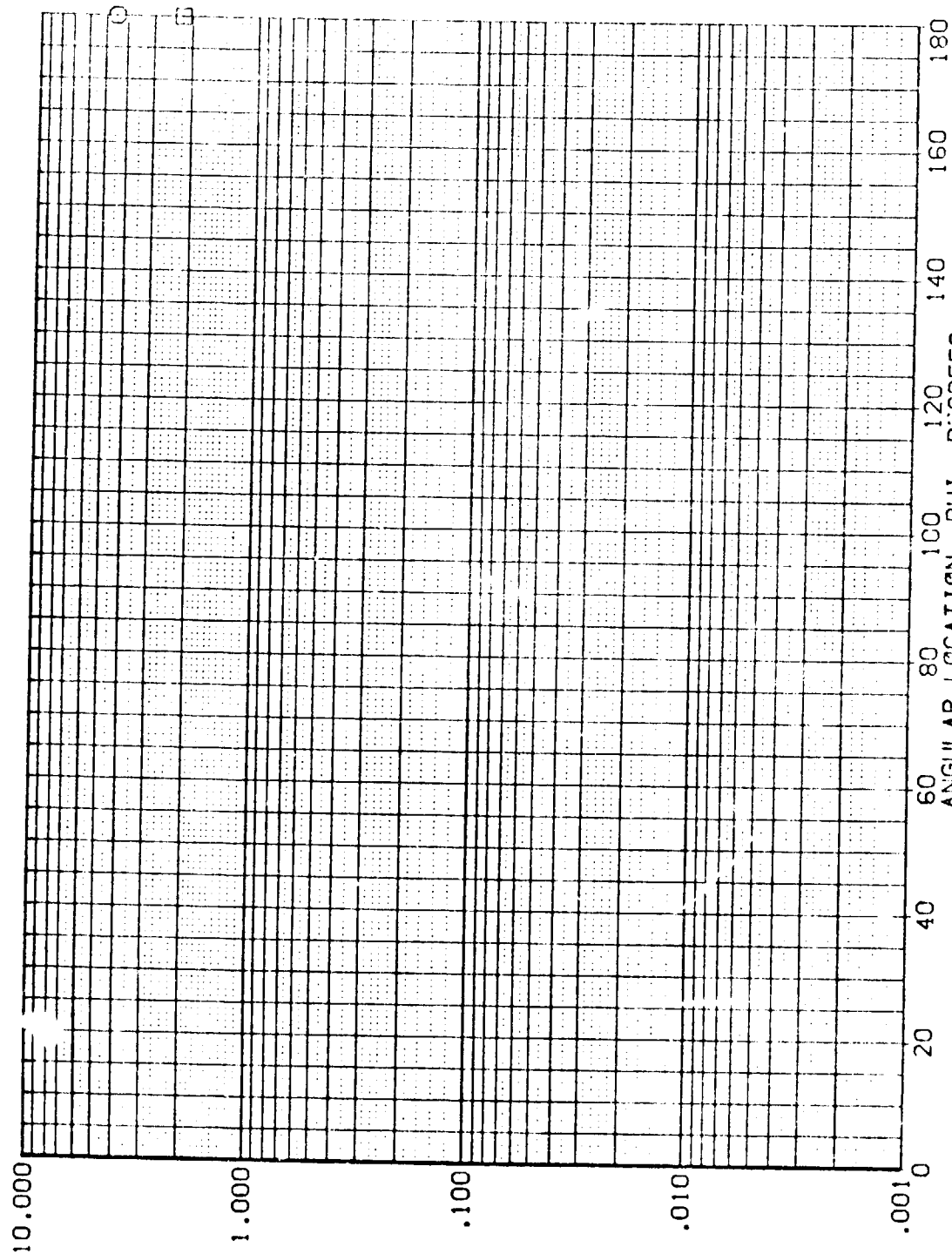


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

$RN/L = 4.807$ $HA/W/HT = 1.000$ $X/L = .000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) ☐ IM18 810C507M87M3F4V5 T8
 (R0MT03) ☐ IM18 810C507M87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

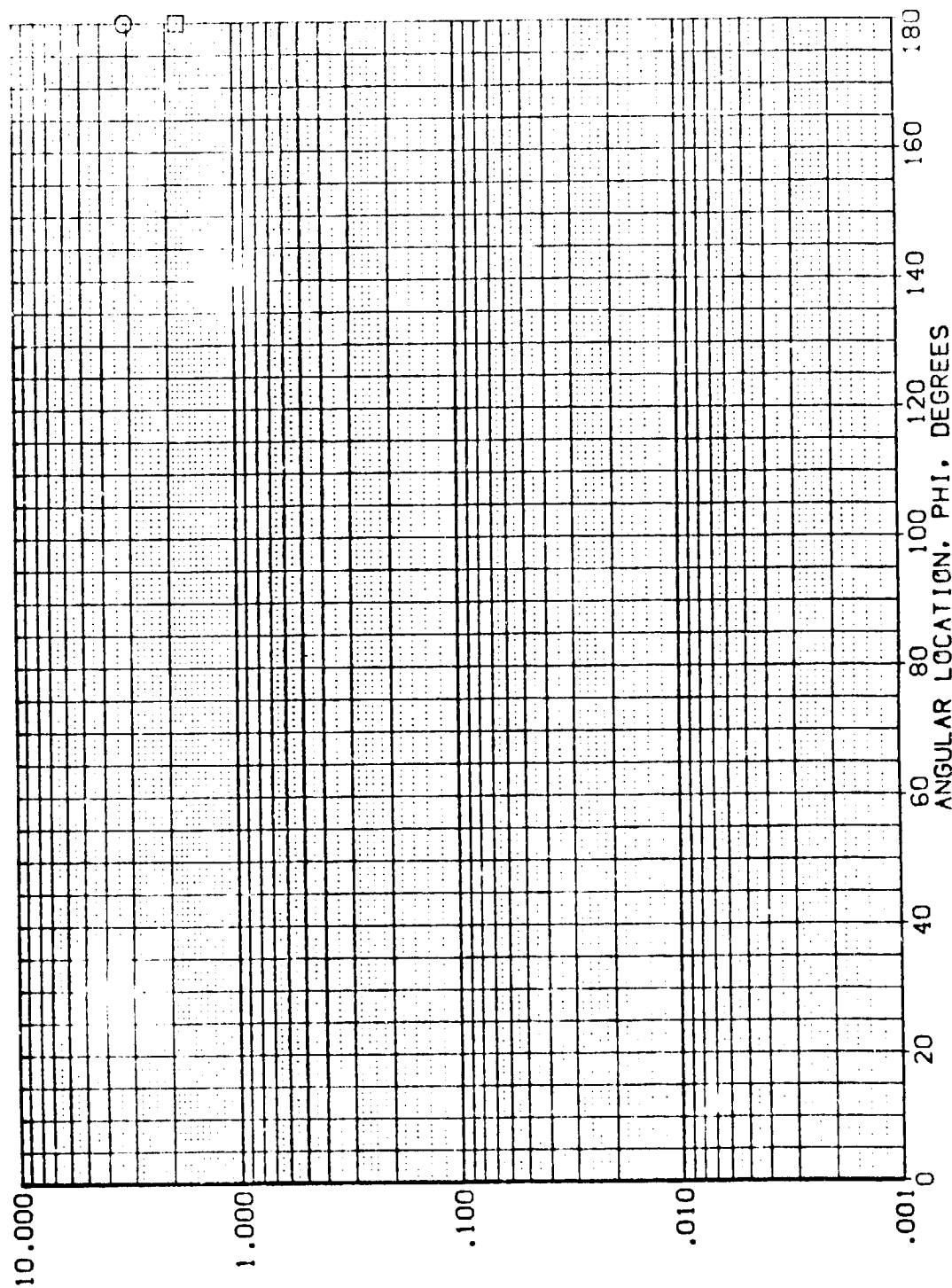


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .010

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) B IM18 B10C507487M3F4V3 T8
 (R0M103) IM18 B10C507487M3F4V3 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

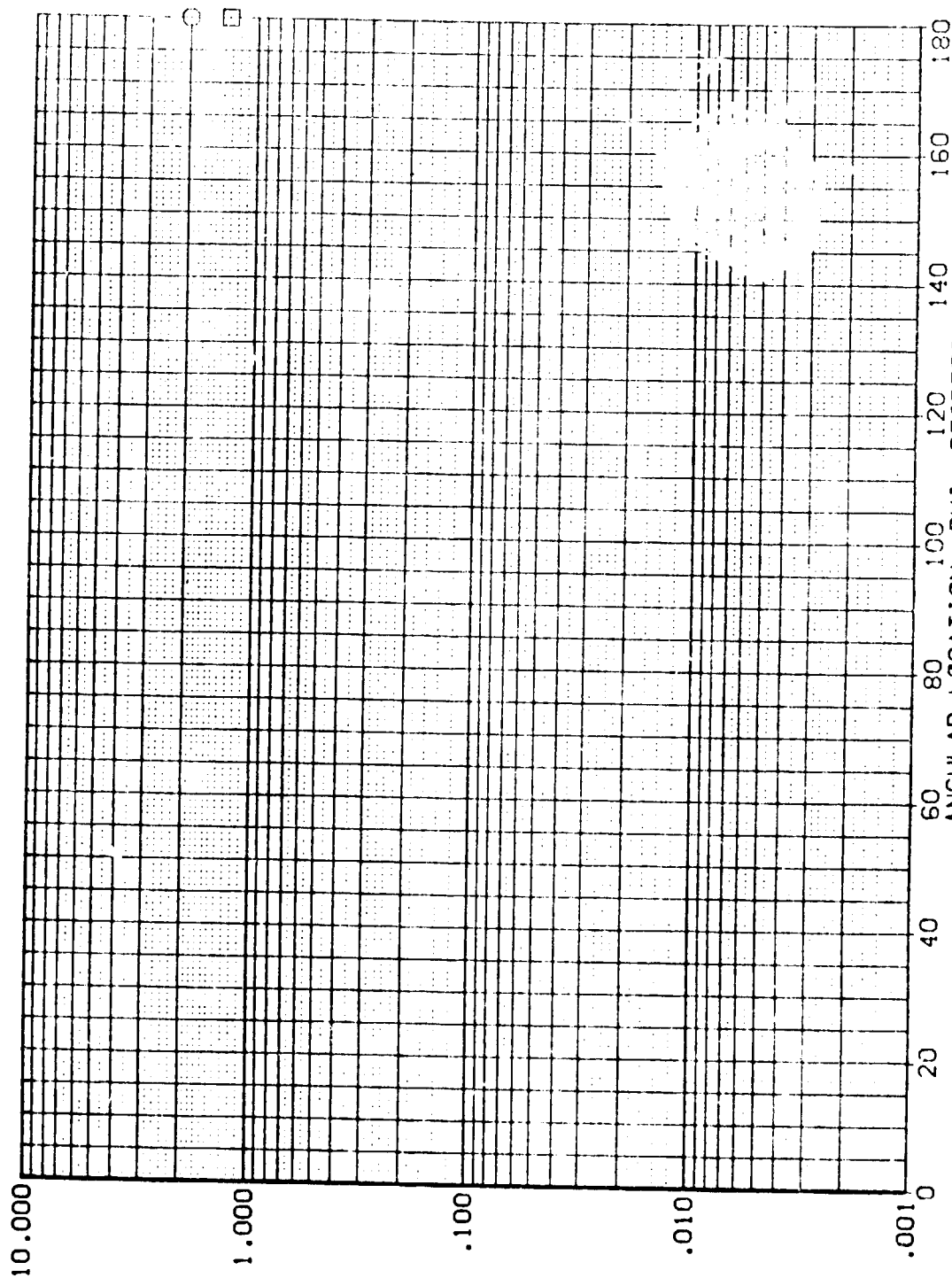


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .020

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) 1H18 810C507V87H3F4V5 T8
 (R0MT03) 1H18 810C507V87H3F4V5 T8

BETA ALPHA MACH
 .000 .000 5.050
 .000 -5.000 5.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

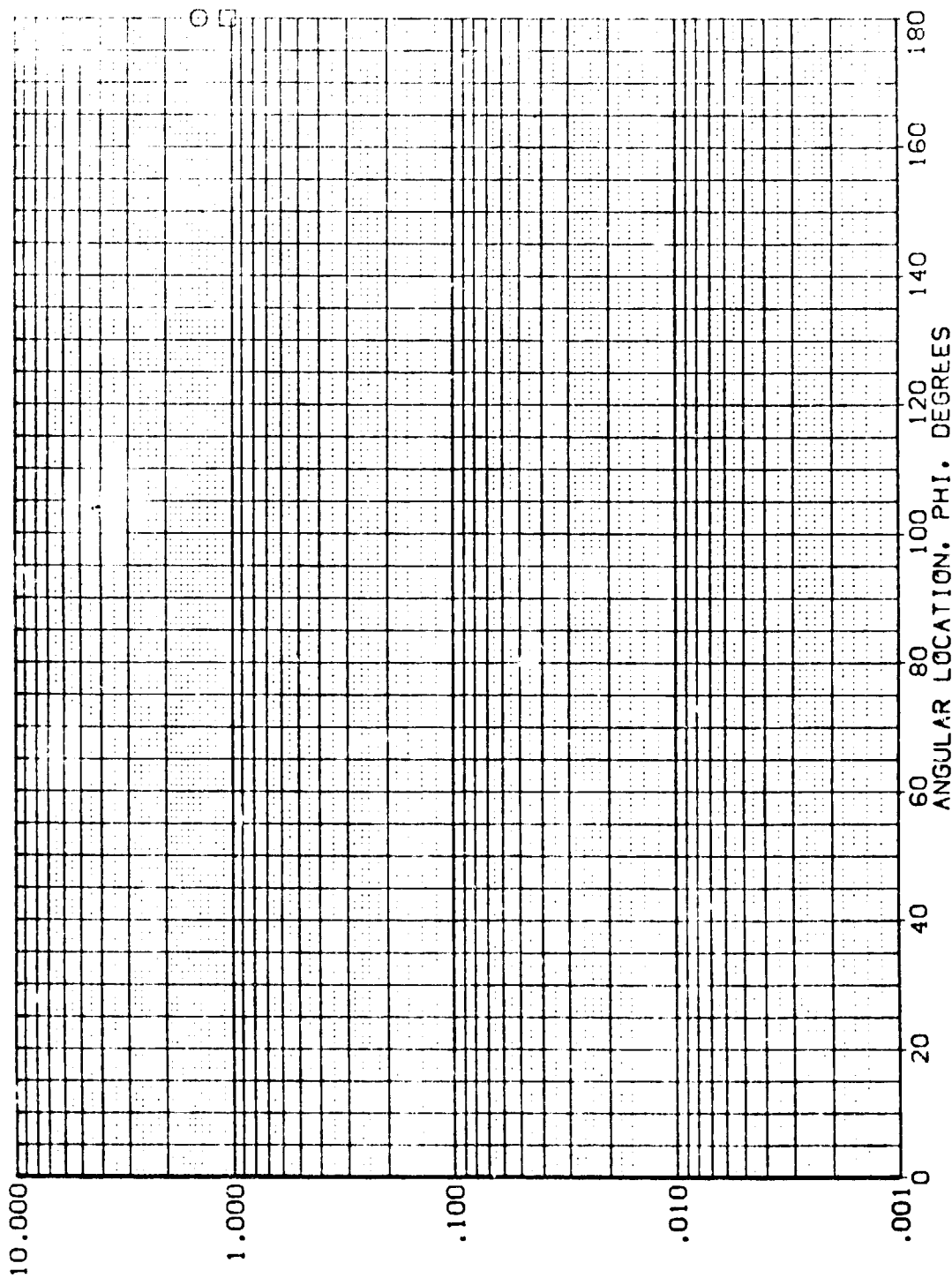


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .060

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) IM18 810C5074874V5 T8
 (RQMT03) IM18 810C5074874V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

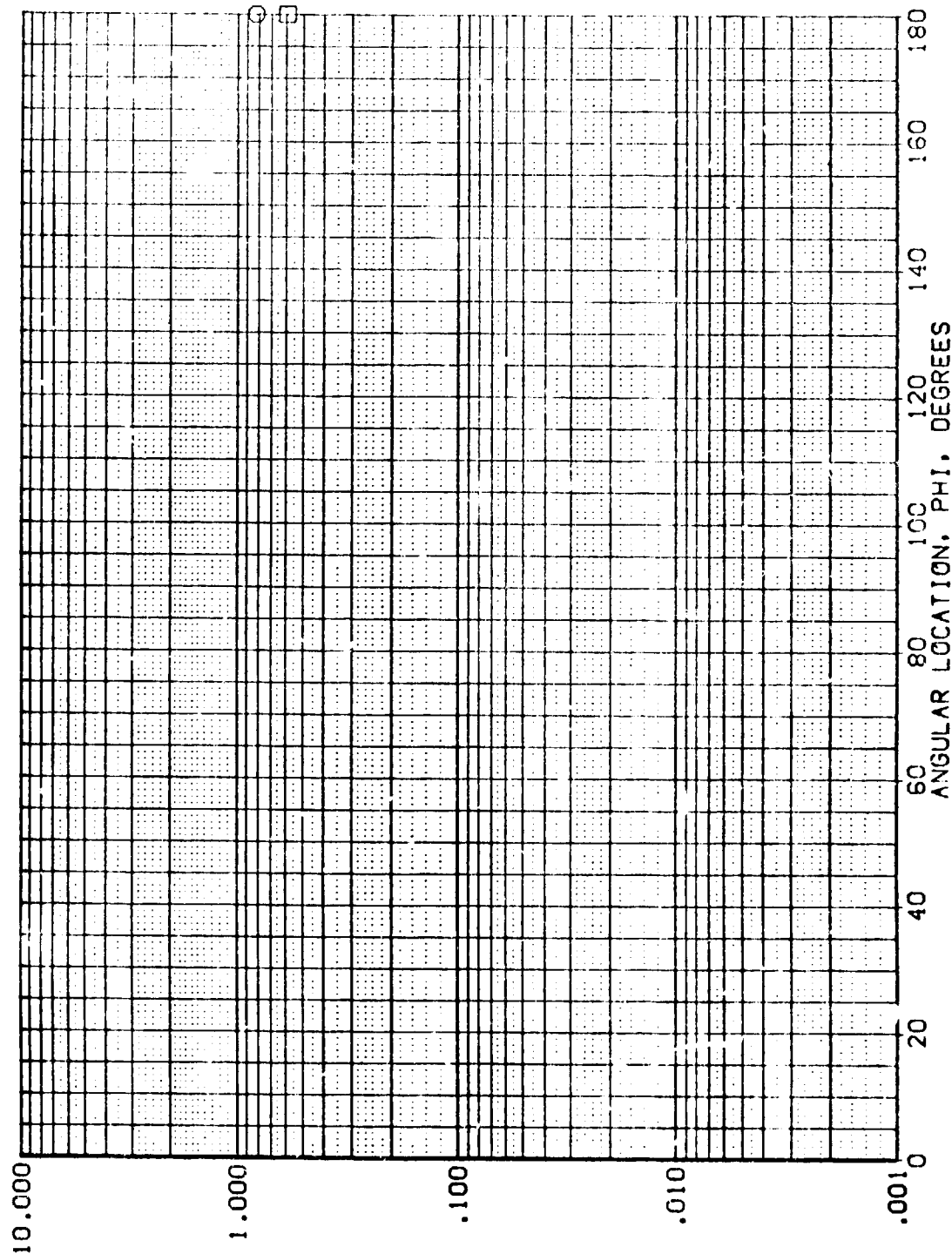


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH Φ - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .100

DATA SET SYMBOL
(R0HT02) ☐
(R0HT03) ☐

CONFIGURATION DESCRIPTION
IM18 B10C5D7V87H3F4V3 T8
IM18 B10C5D7V87H3F4V3 T8

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

EXTERNAL TANK
EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

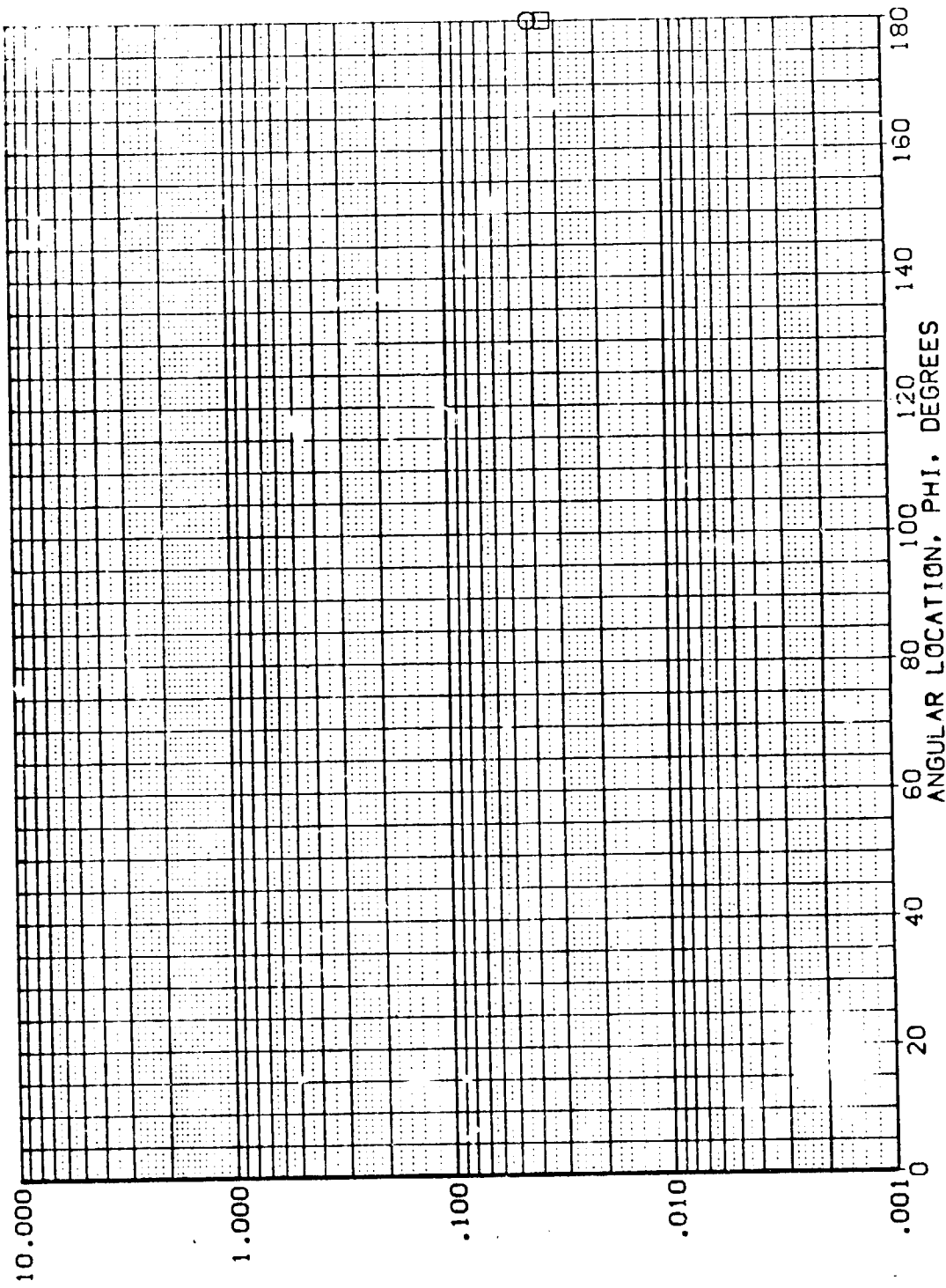



FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .150

DATA SET SYMBOL (R0MT02) (R0MT03) 

CONFIGURATION DESCRIPTION
IM18 810C507487M3F4V3 T8
IM18 810C507487M3F4V3 T8

EXTERNAL TANK
EXTERNAL TANK

BETA .000

ALPHA .000

MACH 6.000

6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

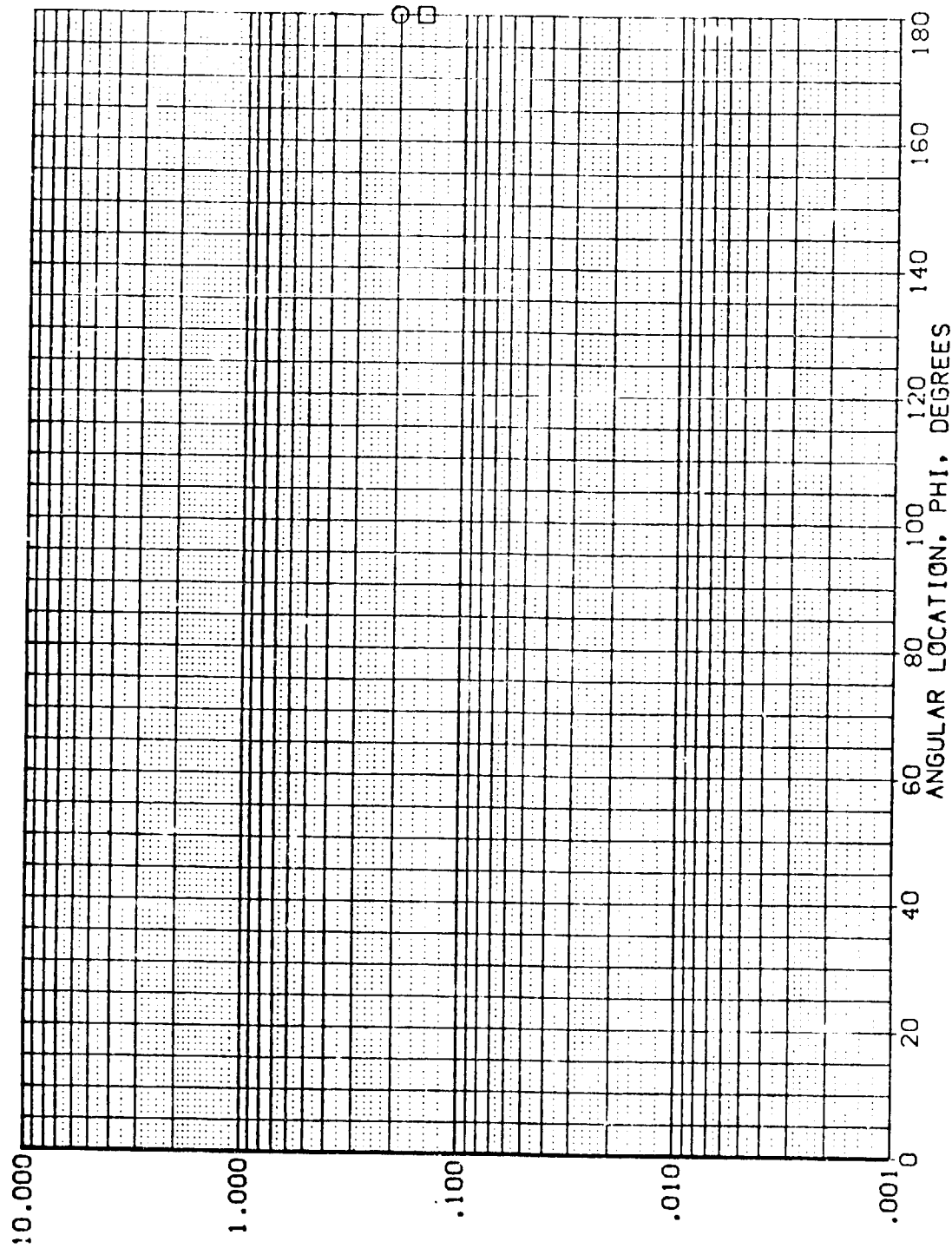


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .200

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL
(R0M102) 8
(R0M103)

CONFIGURATION DESCRIPTION
IH18 B10C507487M314V3 T8
IH18 B10C507487M314V3 T8

EXTERNAL TANK
EXTERNAL TANK

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

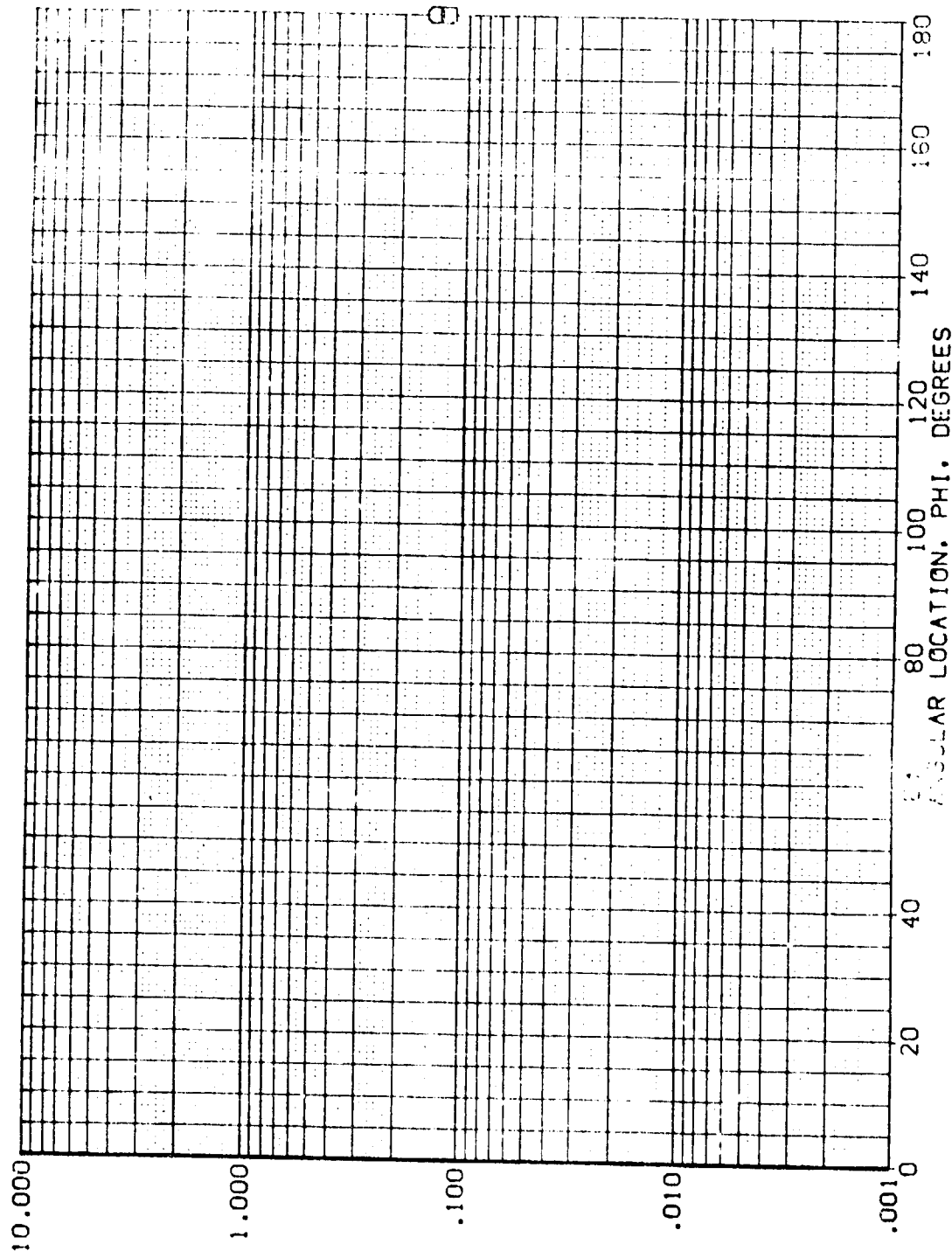


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .250

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) ☐ I118 B10C507W87H3F4V5 T8
 (R0MT03) ☐ I118 B10C507W87H3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

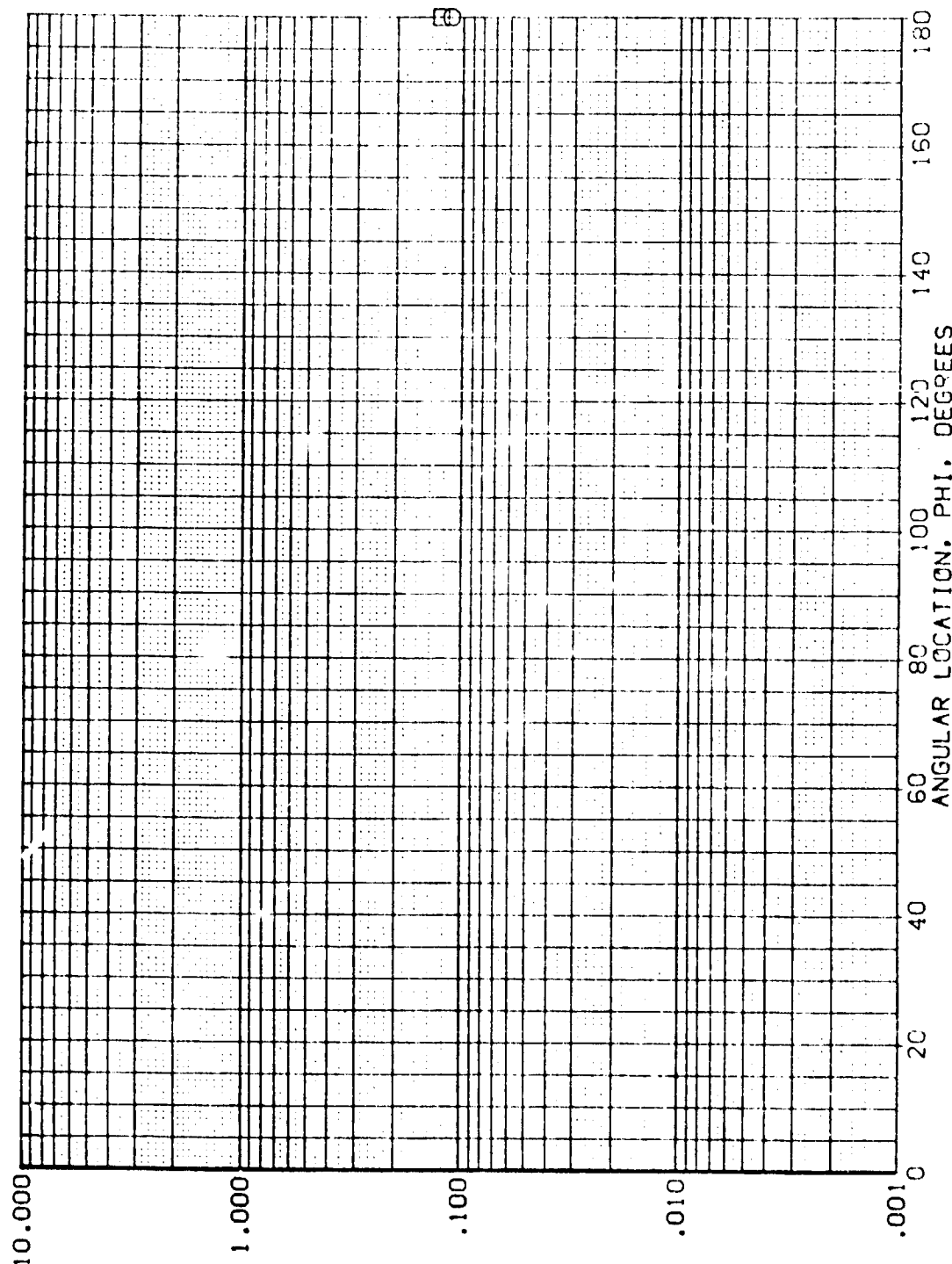


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .300

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL: 8
 (R0MT02)
 (R0MT03)

CONFIGURATION DESCRIPTION
 M18 B10C507W87M3F4V5 T8
 M18 B10C507W87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA: .000
 .000
 .000
 ALPHA: .000
 .000
 .000
 MACH: 6.000
 6.000
 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

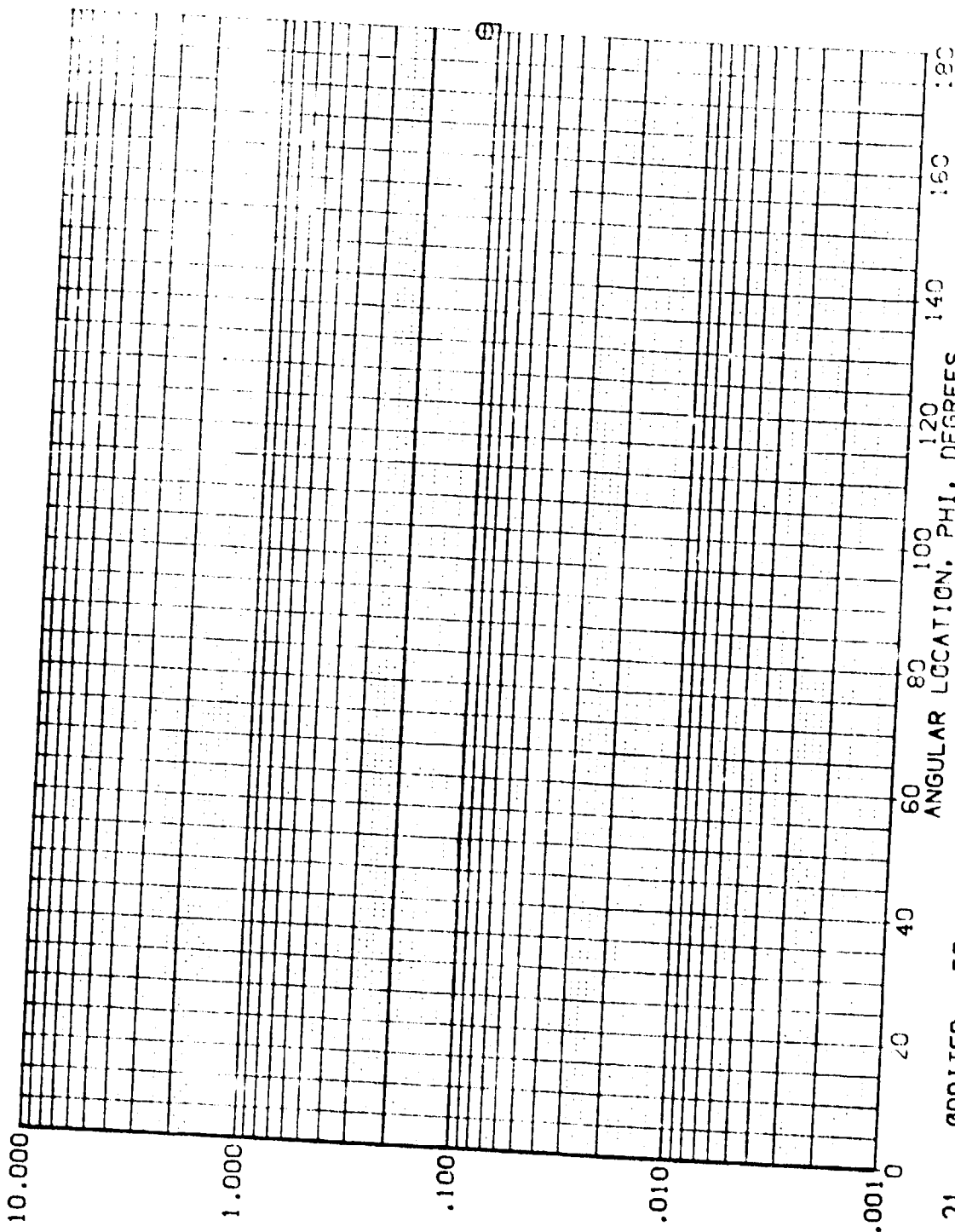


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS
 RN/L = 4.807 HAW/HT = 1.000 X/L = .350

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) 1M18 B10C507V87M3F4V5 T8
 (RQMT03) 1M18 B10C507V87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA
 .000
 .000

ALPHA
 .000
 -.000

MACH
 6.000
 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

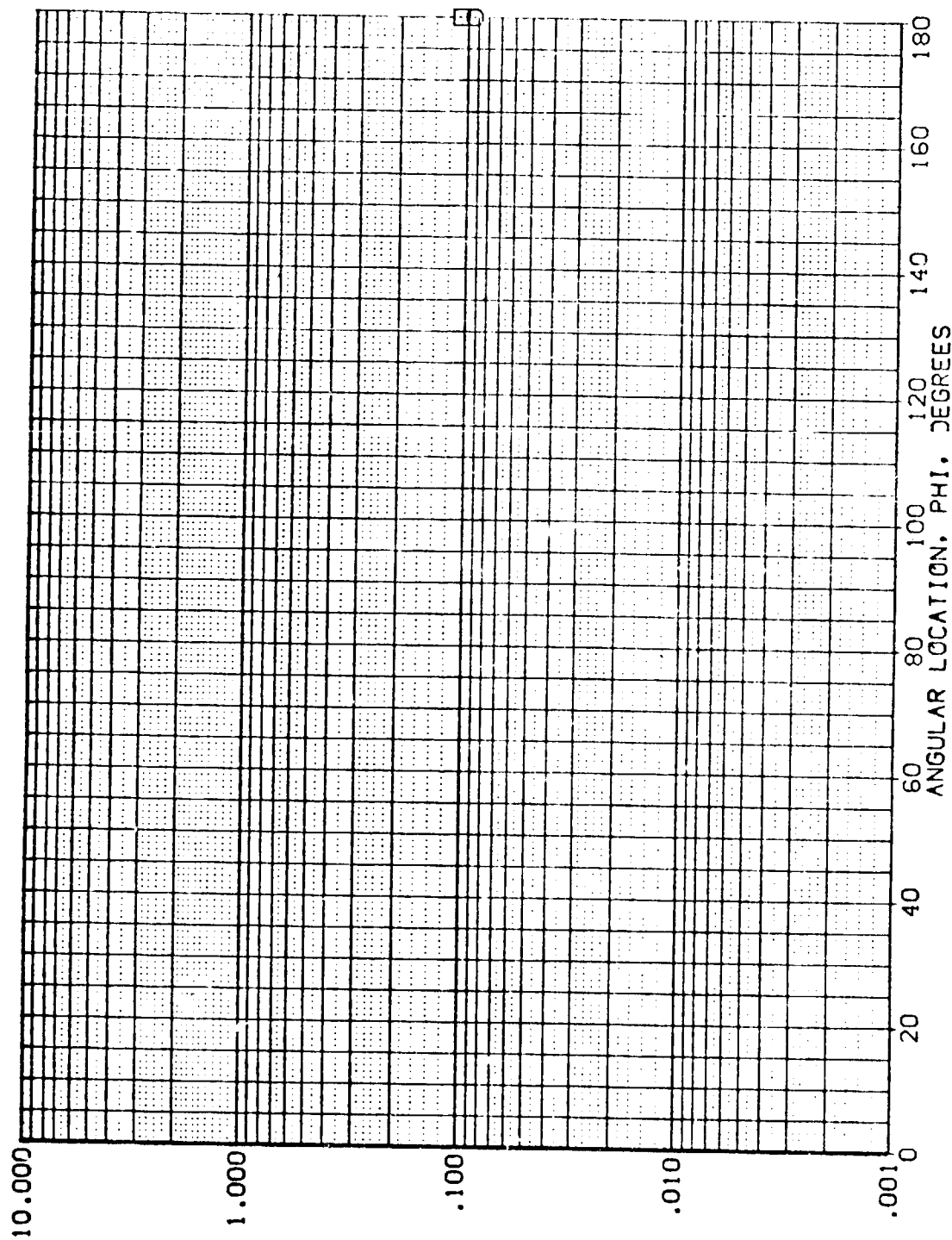


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .375

DATA SET SYMBOLS CONFIGURATION DESCRIPTION
 (R0M102) [H18 B10C507487M3F4V5 T8
 (R0M103) [H18 9:0C507487M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 5.000 5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

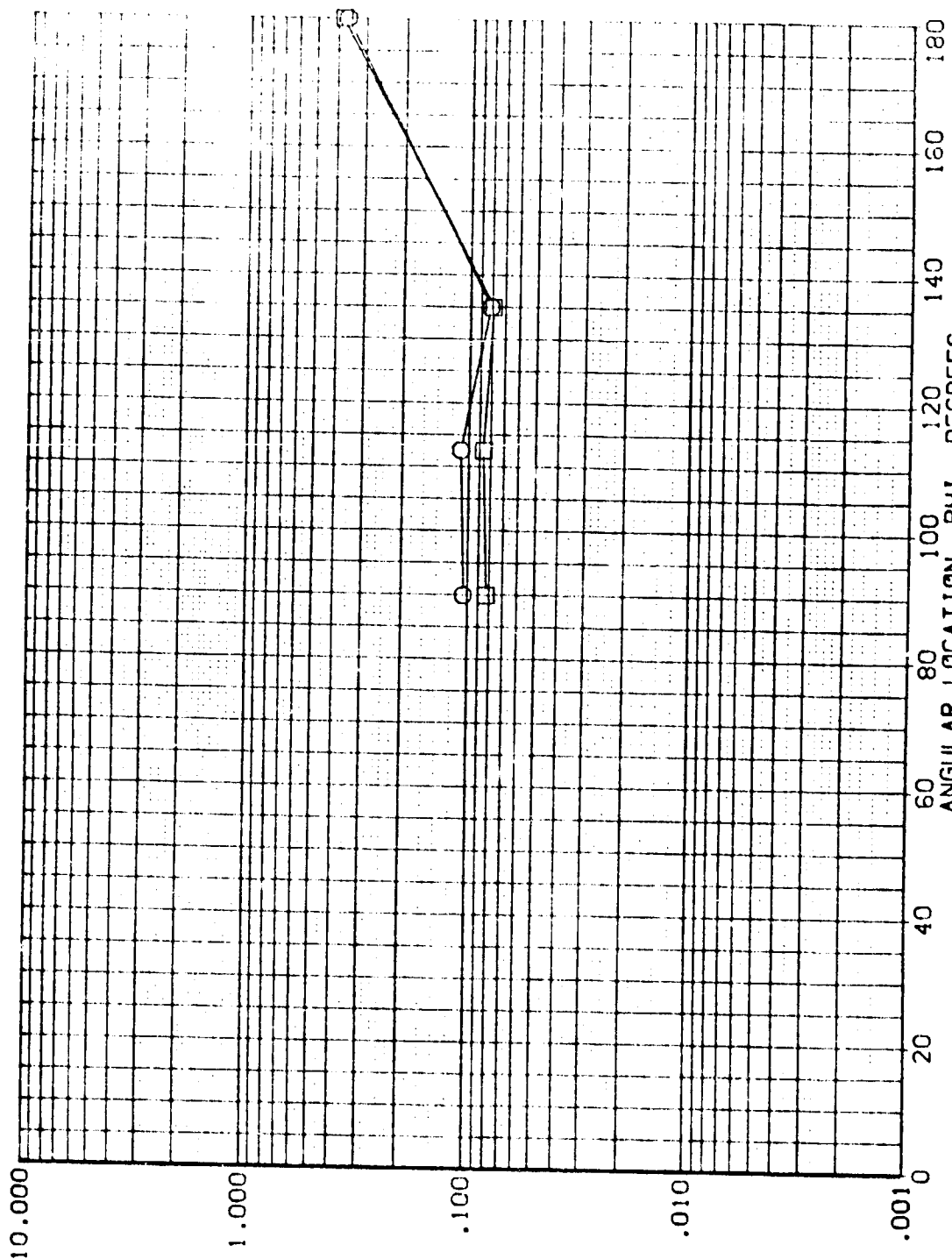


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (PQ102) [H18 B10C507487H3F4V5 T8
 (RC103) [H18 B10C507487H3F4V5 T9

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

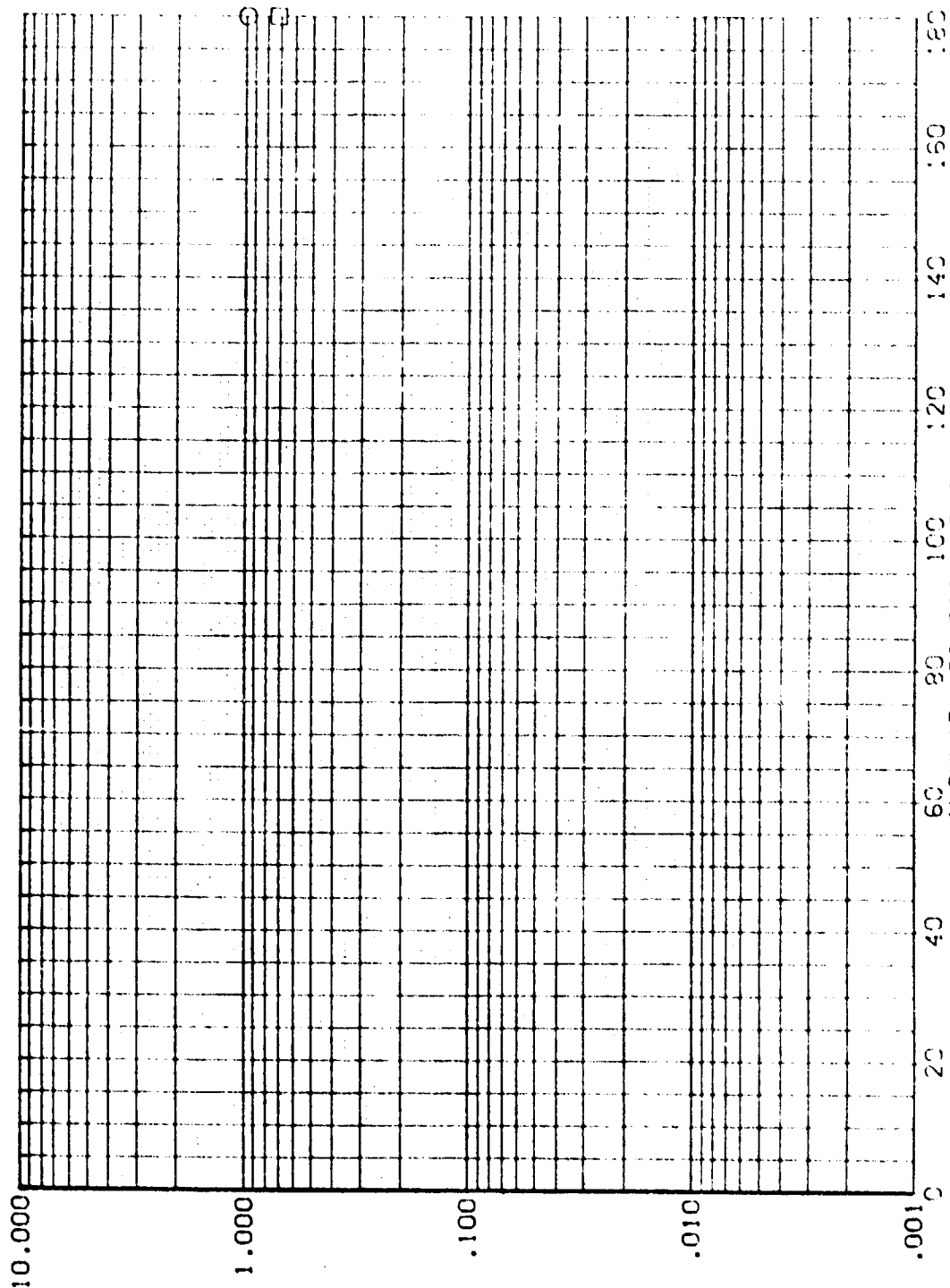


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 MAX/HT = 1.000 X/L = .425

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(RQ-T02)	IM18 810C507W87M3F4V5 T8	.000	.000	5.000
(RQ-T03)	IM18 810C507W87M3F4V5 T8	.000	-5.000	5.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

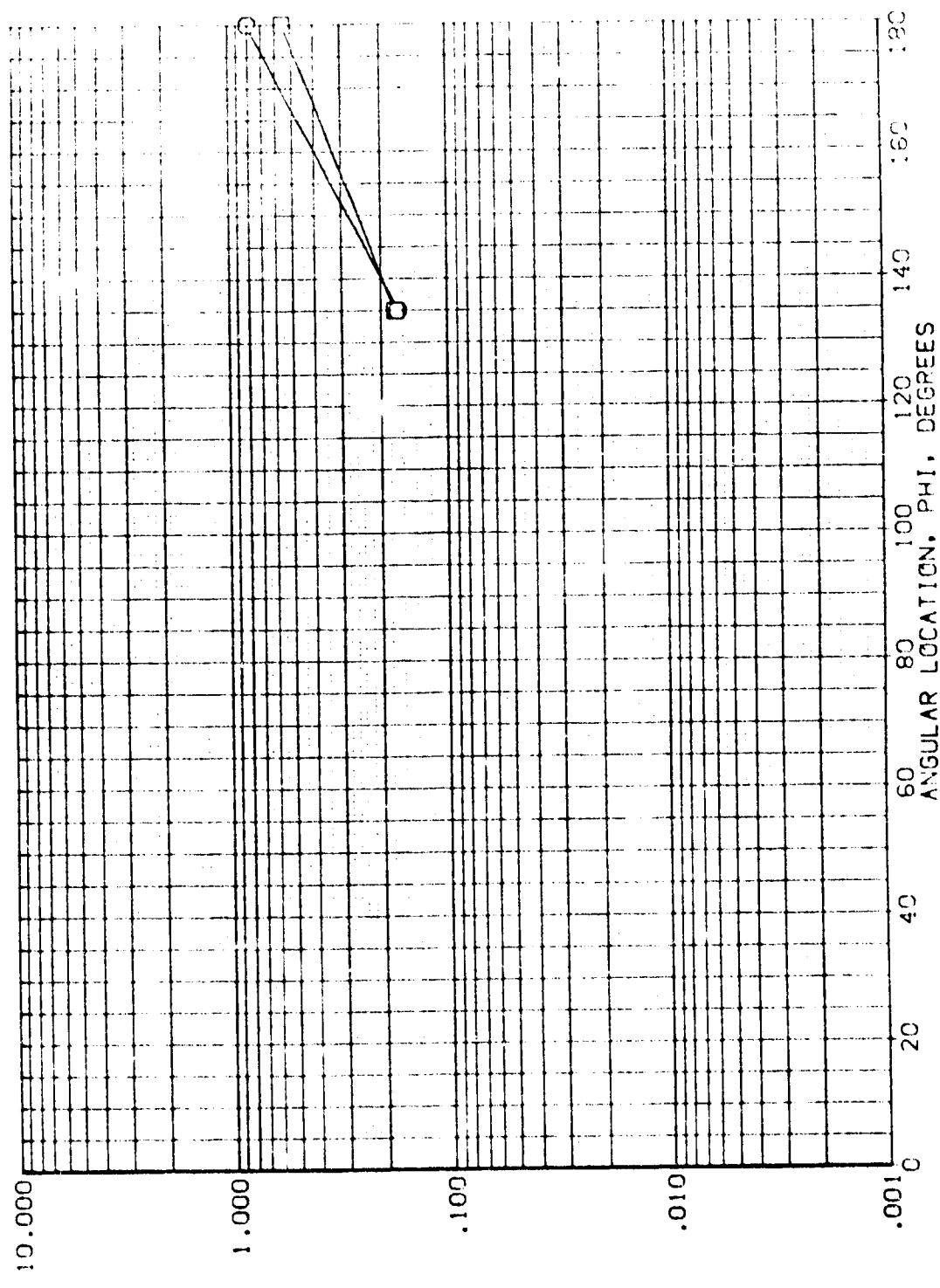


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .450

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) B IM18 B10C507W87M3F4V5 T8
 (R0M103) B IM18 B10C507W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 0.000
 .000 -5.000 0.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

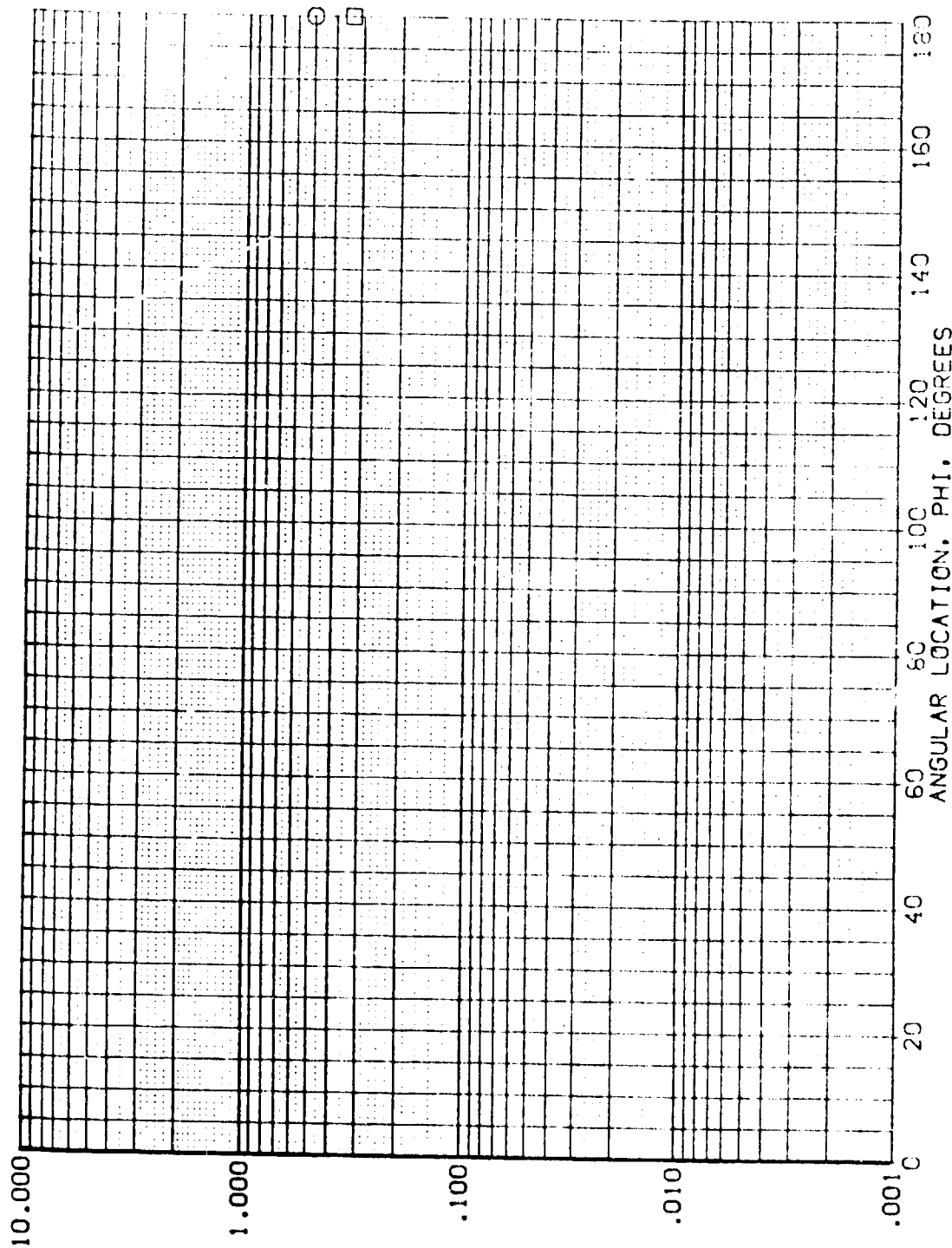


FIG 21 CRBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .475

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT02) B B10C507W87M3F4V5 T8
 (RQMT03) B B10C507W87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

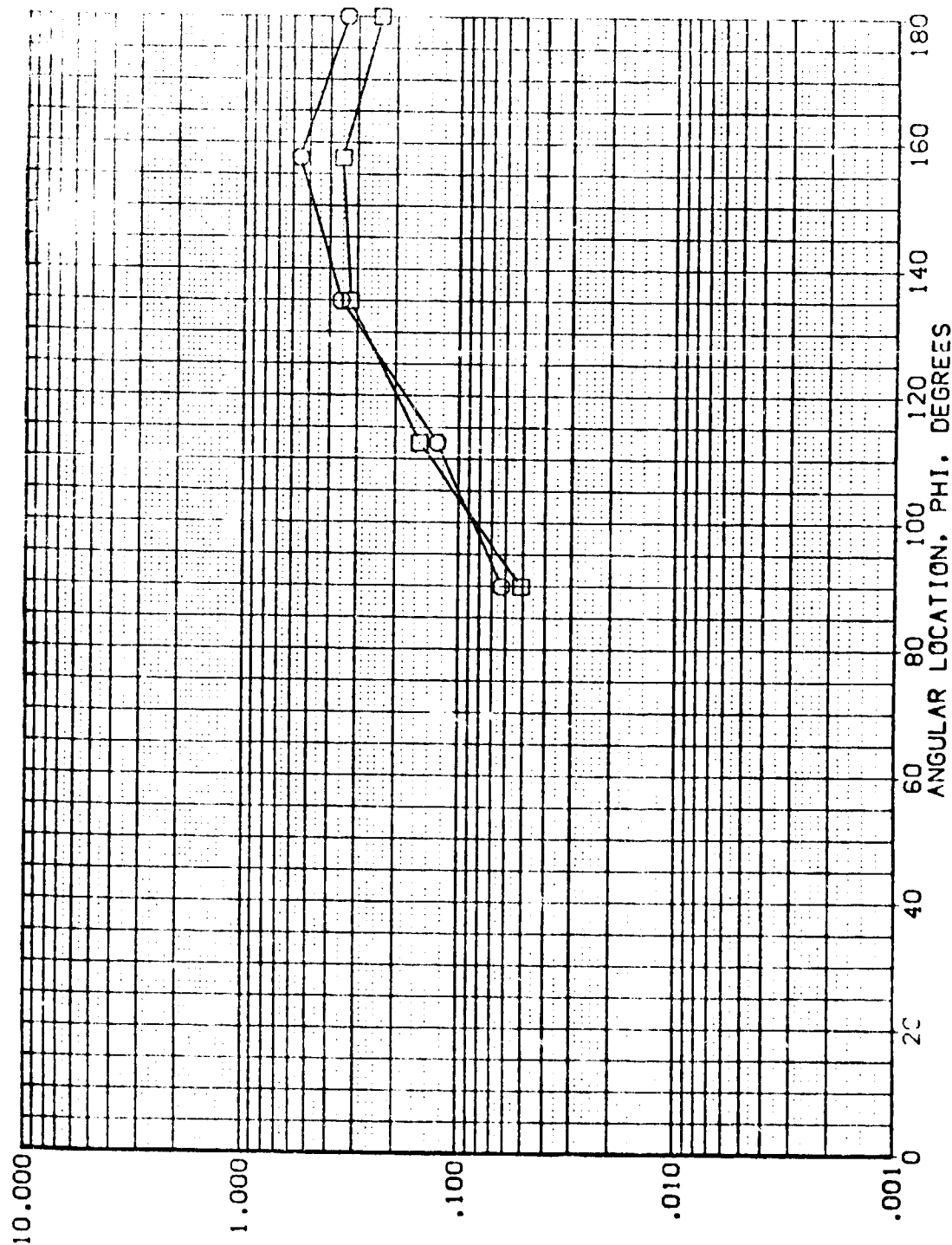


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NC TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0H102) ☐ IHI8 B10C507W87M3F4V5 T8
 (R0H103) ☐ IHI8 B10C507W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

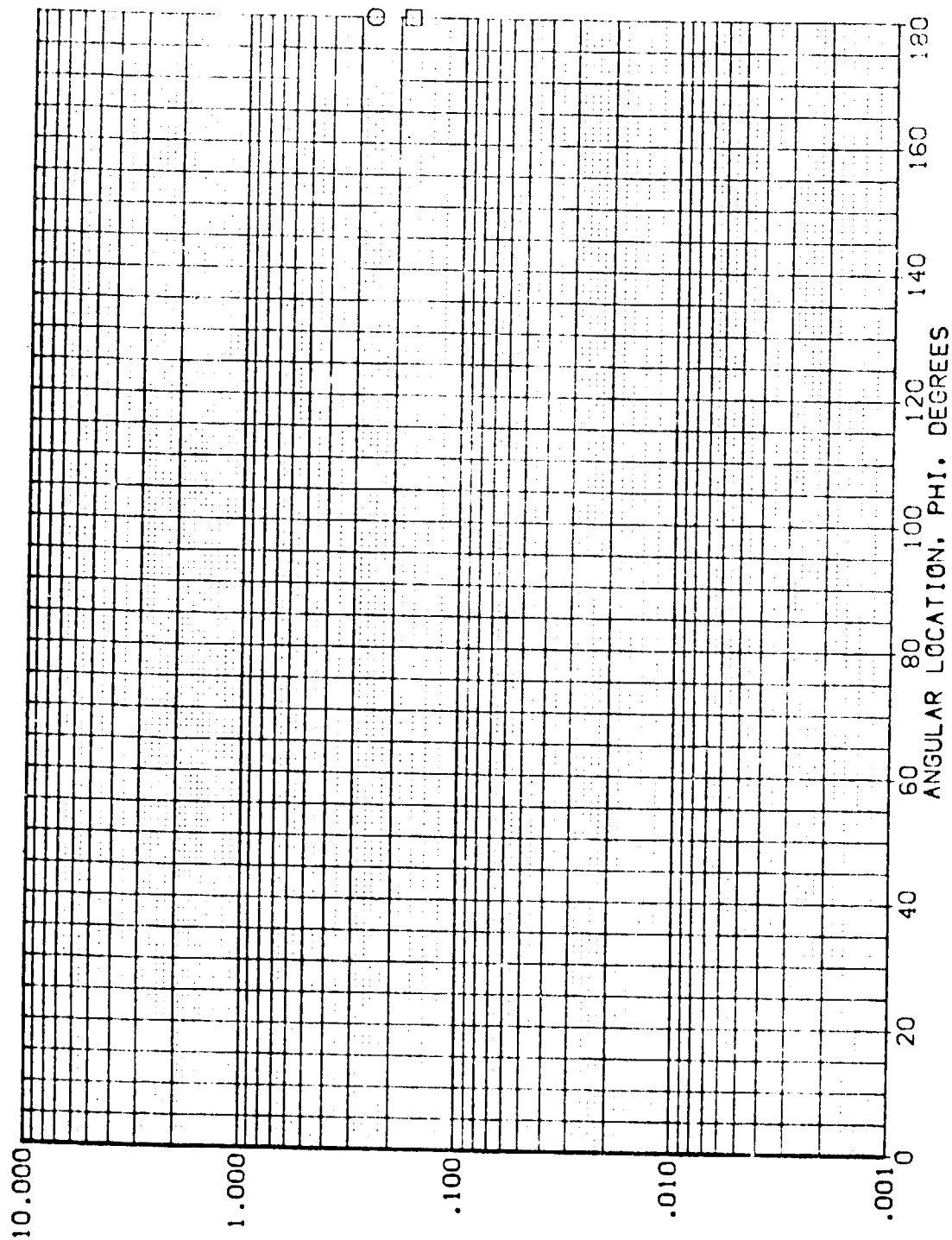


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .525

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT02) A 'M18 810C507487H3F4V5 18
 (R0HT03) 'M18 810C507487H3F4V5 18

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

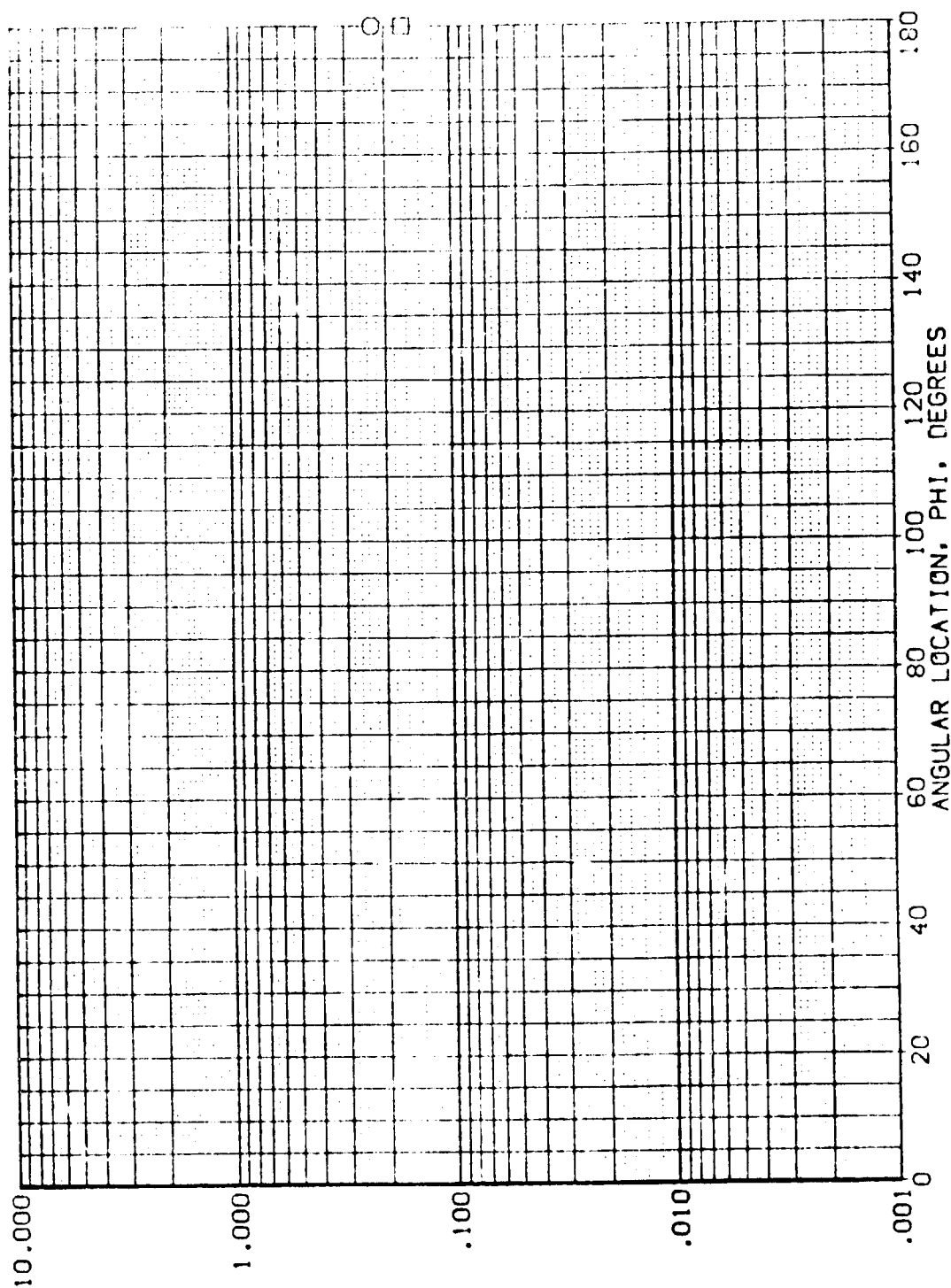


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .550

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M102) 810C507W87N3F4V5 T8
 (R0M103) 810C507W87N3F4V5 T8

EXTERNAL TANK ALPHA MACH
 EXTERNAL TANK .000 6.000
 .000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

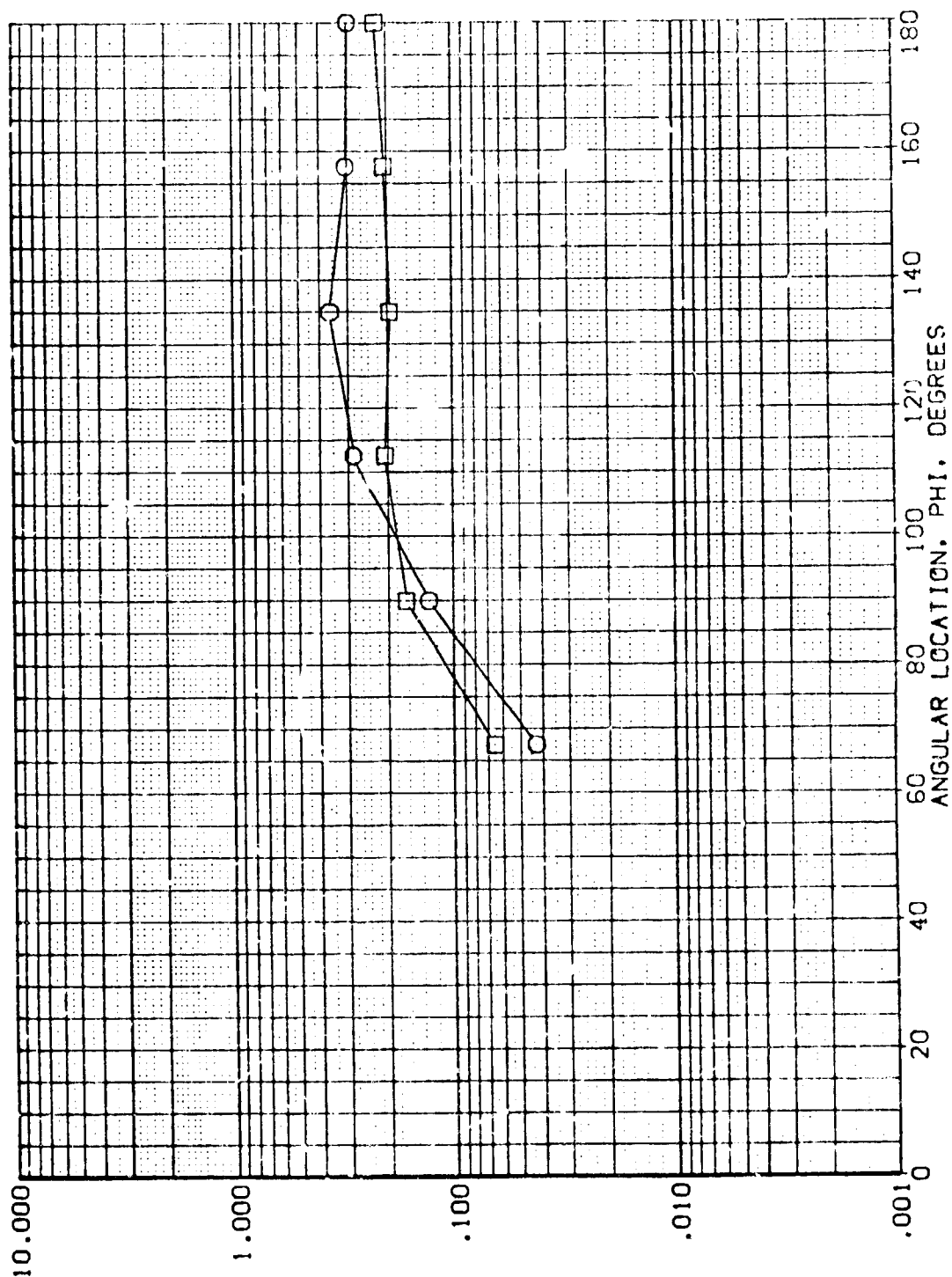


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.607 HAW/HT = 1.000 X/L = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT02) 118 B10C507W87M3F4V5 T6
 (R0HT03) 1H18 B10C507W87M3F4V5 T8

BETA ALPHA MACH
 .000 .000 6.000
 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

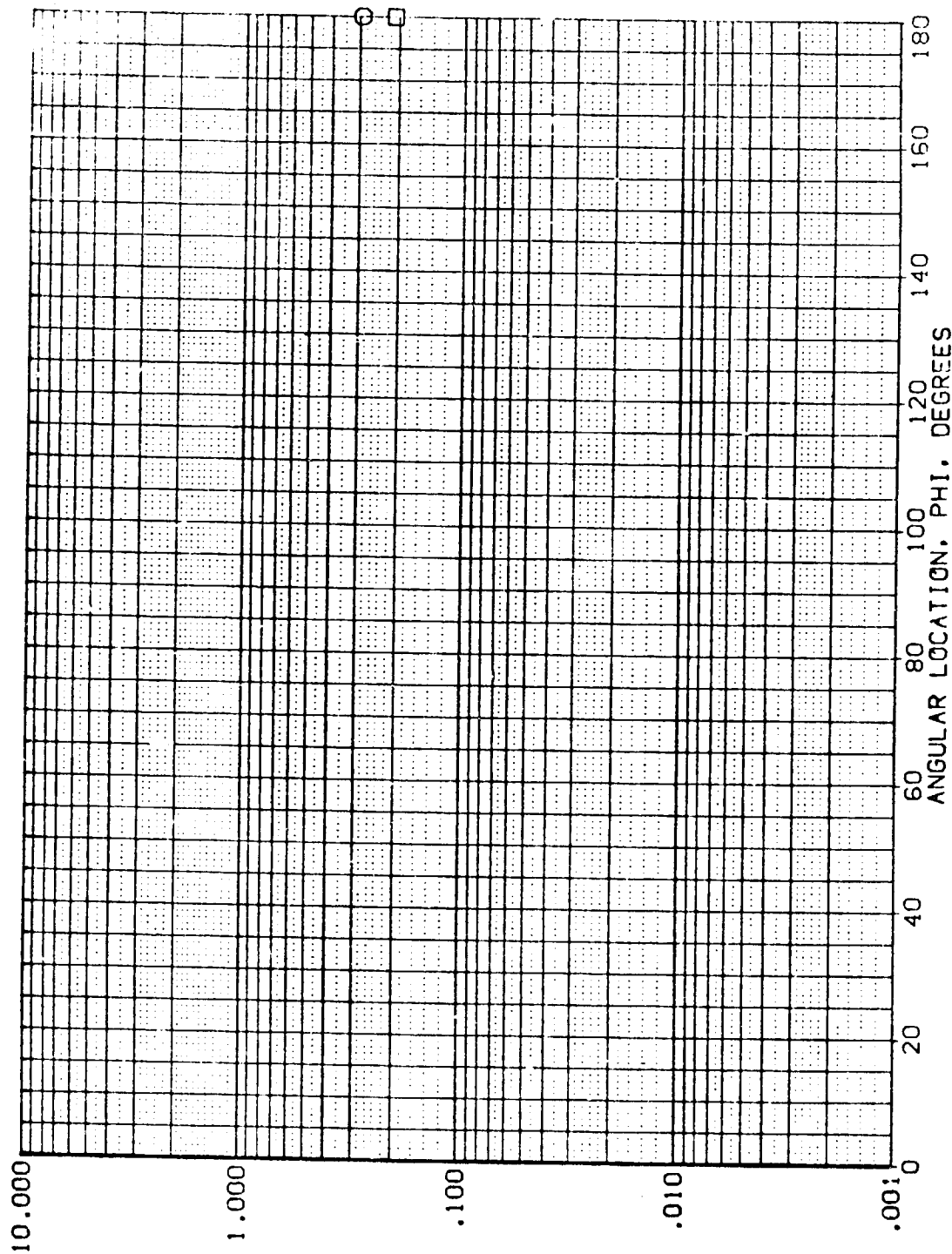


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .650

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0MT02) 1H18 810C507W87M3F4V5 T8
 (R0MT03) 1H18 810C507W87M3F4V5 T8

EXTERNAL TANK
 EXTERNAL TANK

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

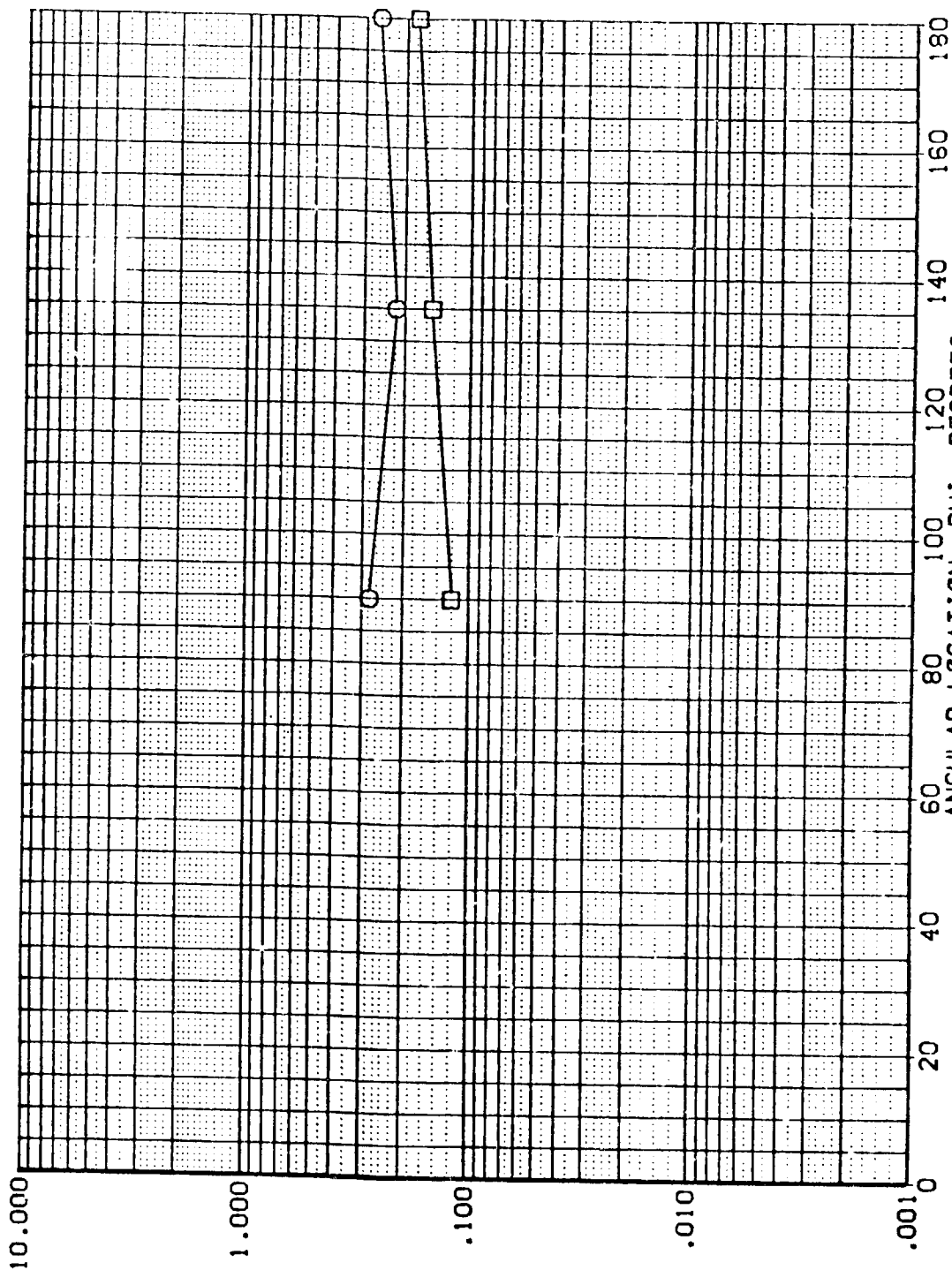


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .700

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(R0MT02) 8
(R0MT03)

CONFIGURATION DESCRIPTION
IH18 810C507W87M3F4V5 T8
IH18 810C507W87M3F4V5 T8

EXTERNAL TANK
EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

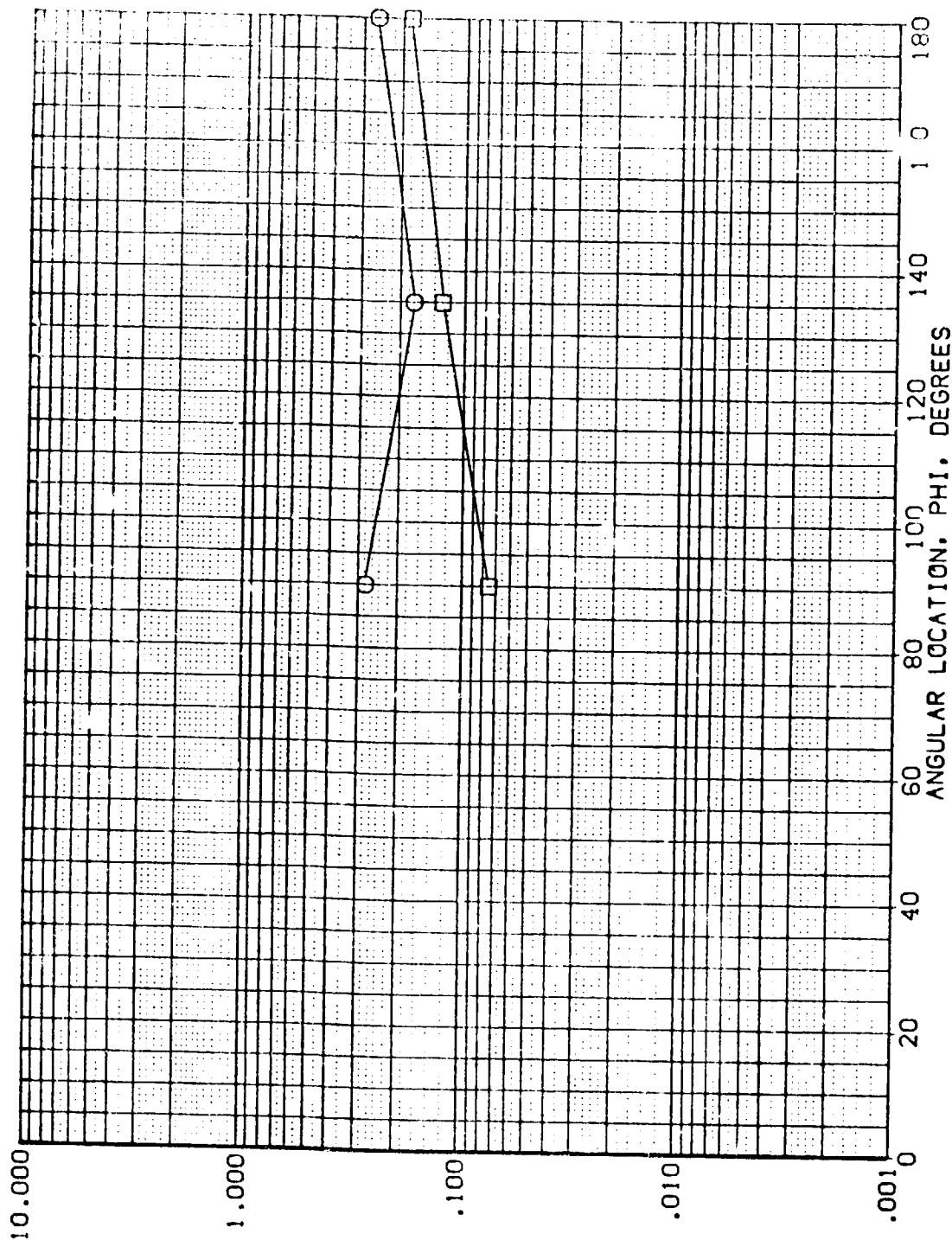


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH ϕ - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .800

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT02) B IH18 810C507W87-3F4VS T8
 (RCHT03) B IH18 810C507W87-3F4VS T8

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

EXTERNAL TANK
 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

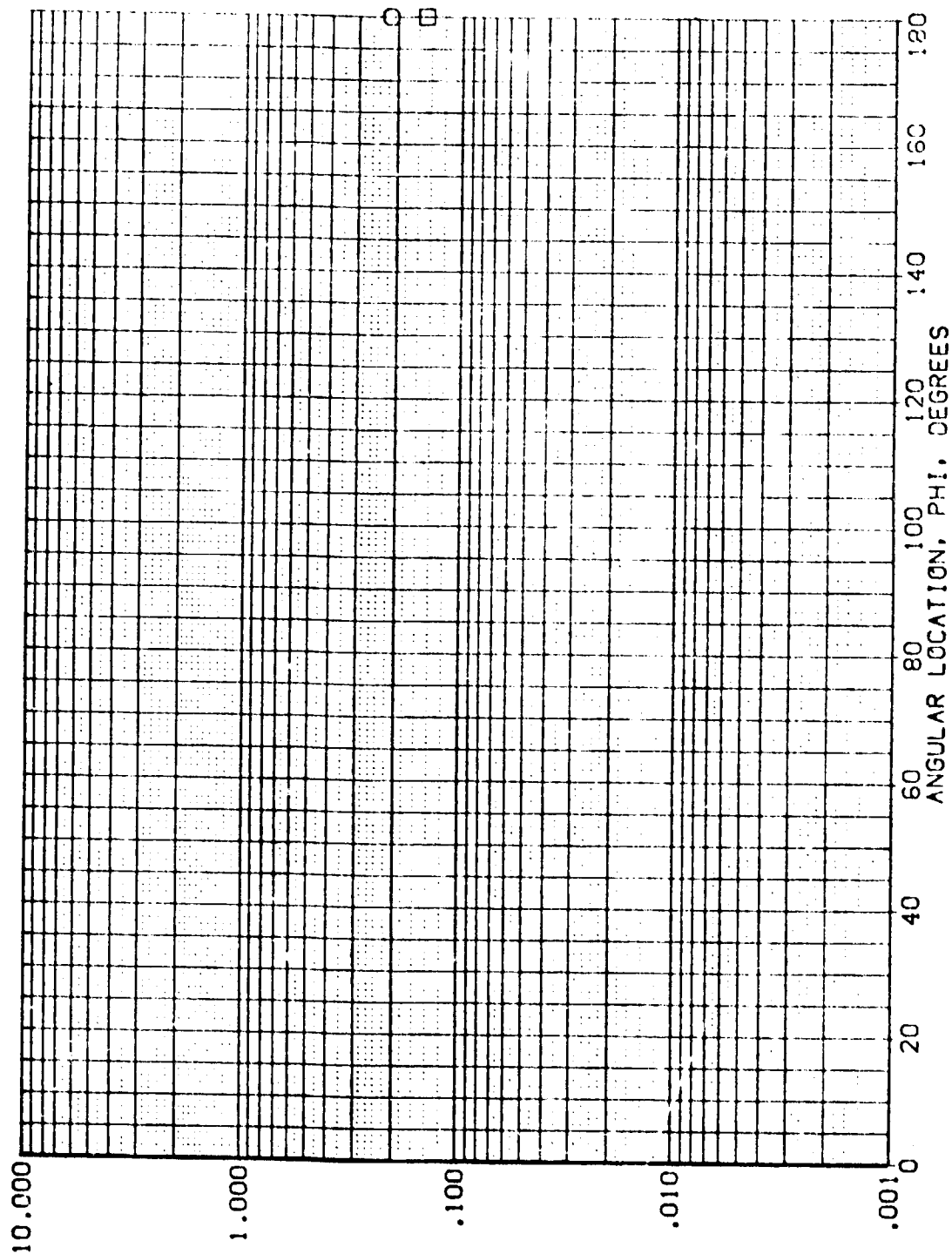


FIG 21 ORBITER + ET - ET DATA - VARIATION WITH PHI - NO TRIPS

RN/L = 4.807 HAW/HT = 1.000 X/L = .900

IHI8 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL X/L HAW/HT RN/L

PARAMETRIC VALUES
ALPHA -5.000
MACH 6.000
X-HT .047
BETA .000
DELTAH .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

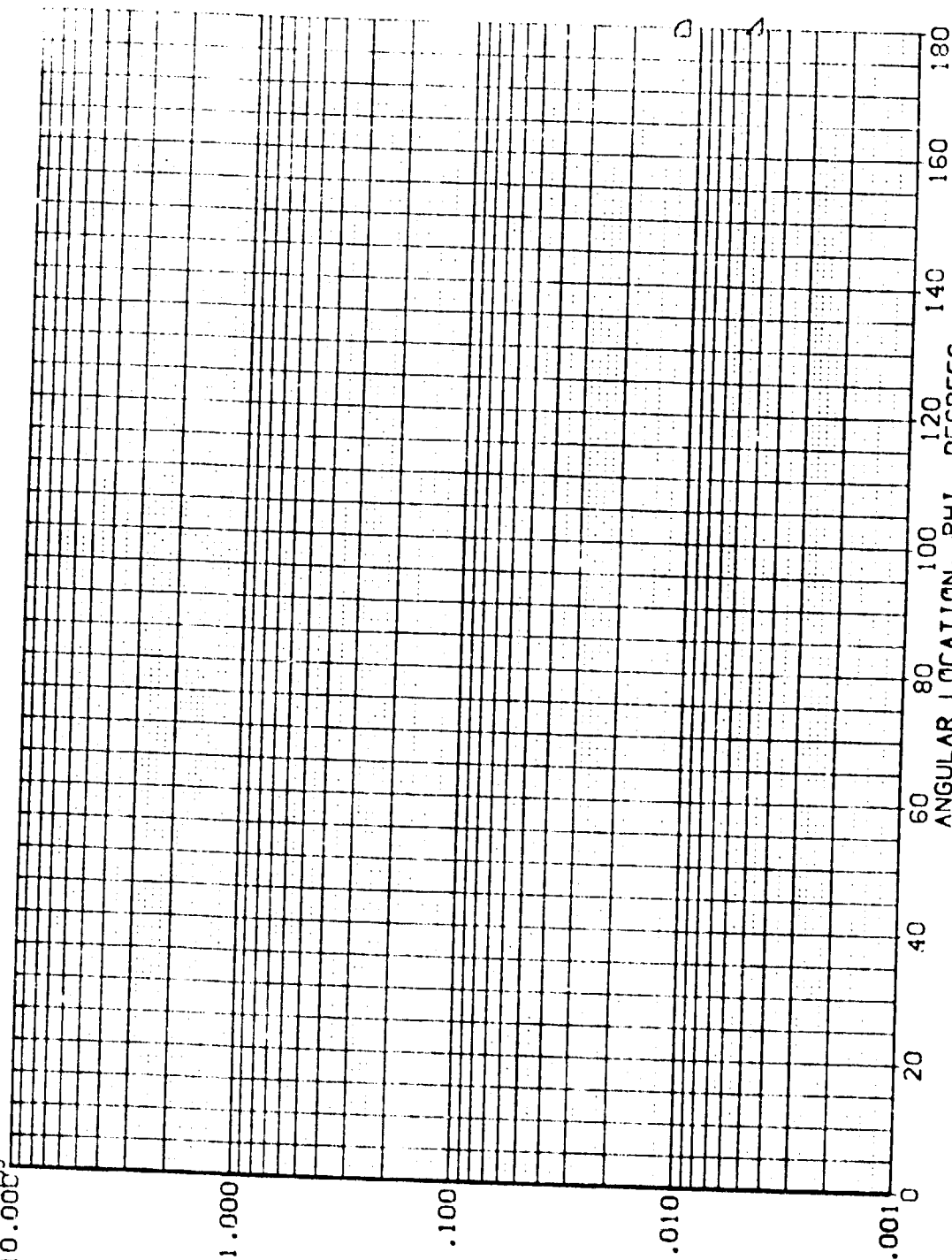


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

!H18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-MT .047
 BETA .000
 DELTAM .175

SYMBOL X/L HAW/MT RW/L
 .200
 .250
 .300
 .350
 .375
 .400

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

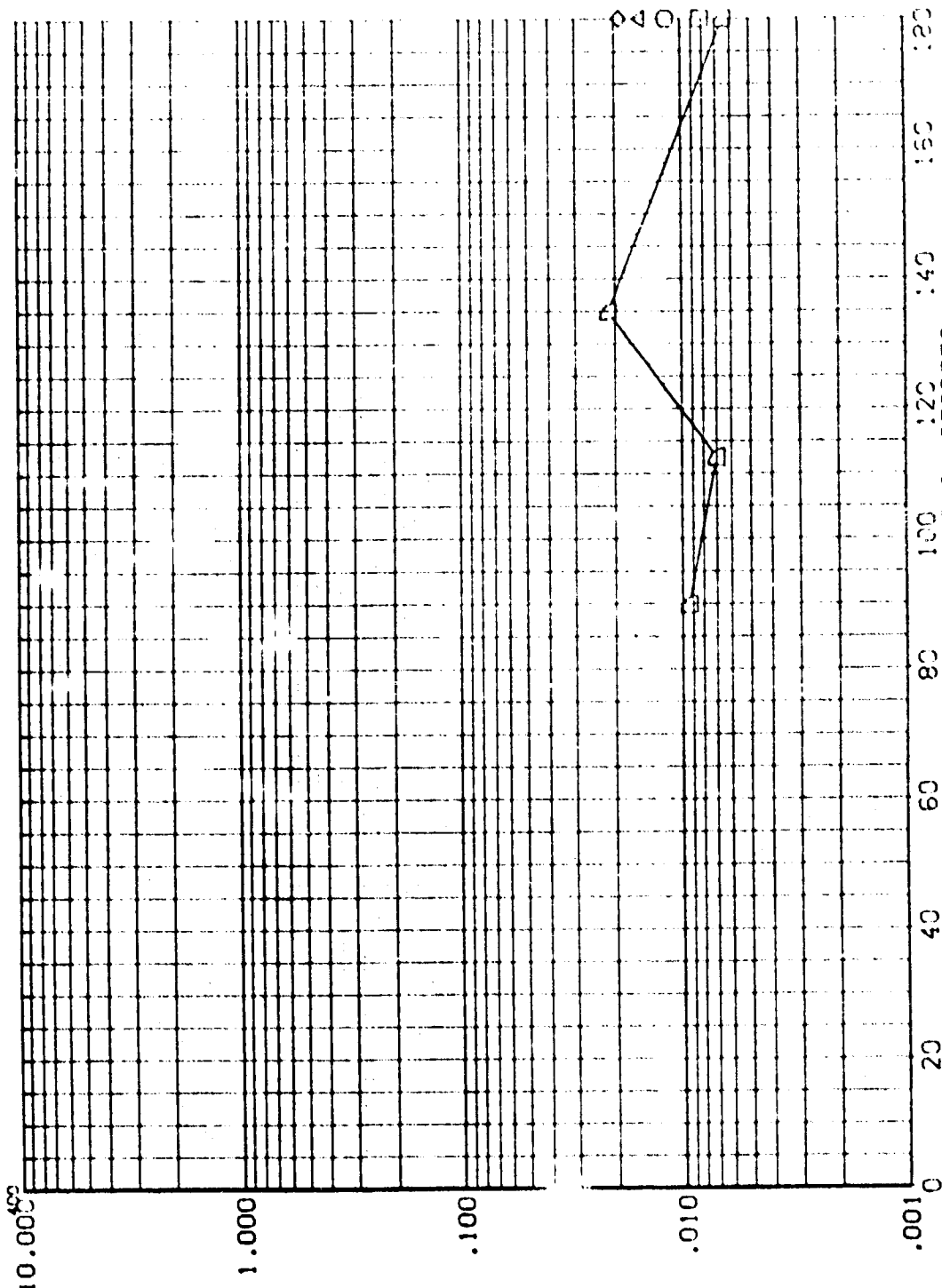


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES
 -5.000 BETA
 6.000 DE-TAH
 .047

ALPHA
 MAC-
 X-HT

HAU/HT RN/L
 .850 4.805

X/L
 .425
 .450
 .475
 .500
 .525

SYMBOL
 □
 ▽
 ◇
 ○

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

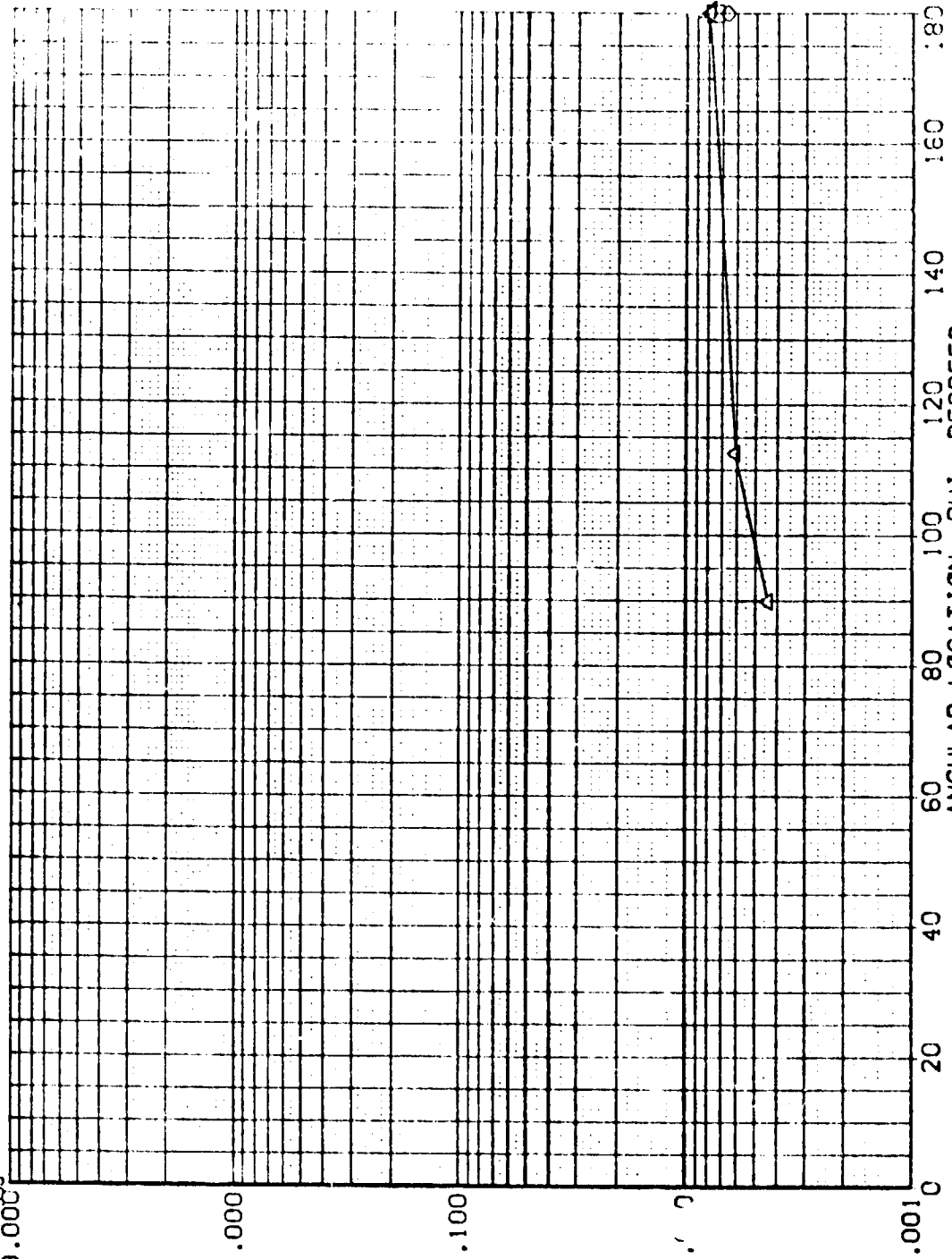


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL X/L HAW/HT RN/L
 0.600
 0.650
 0.700
 0.800
 0.900

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .047
 BETA .000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

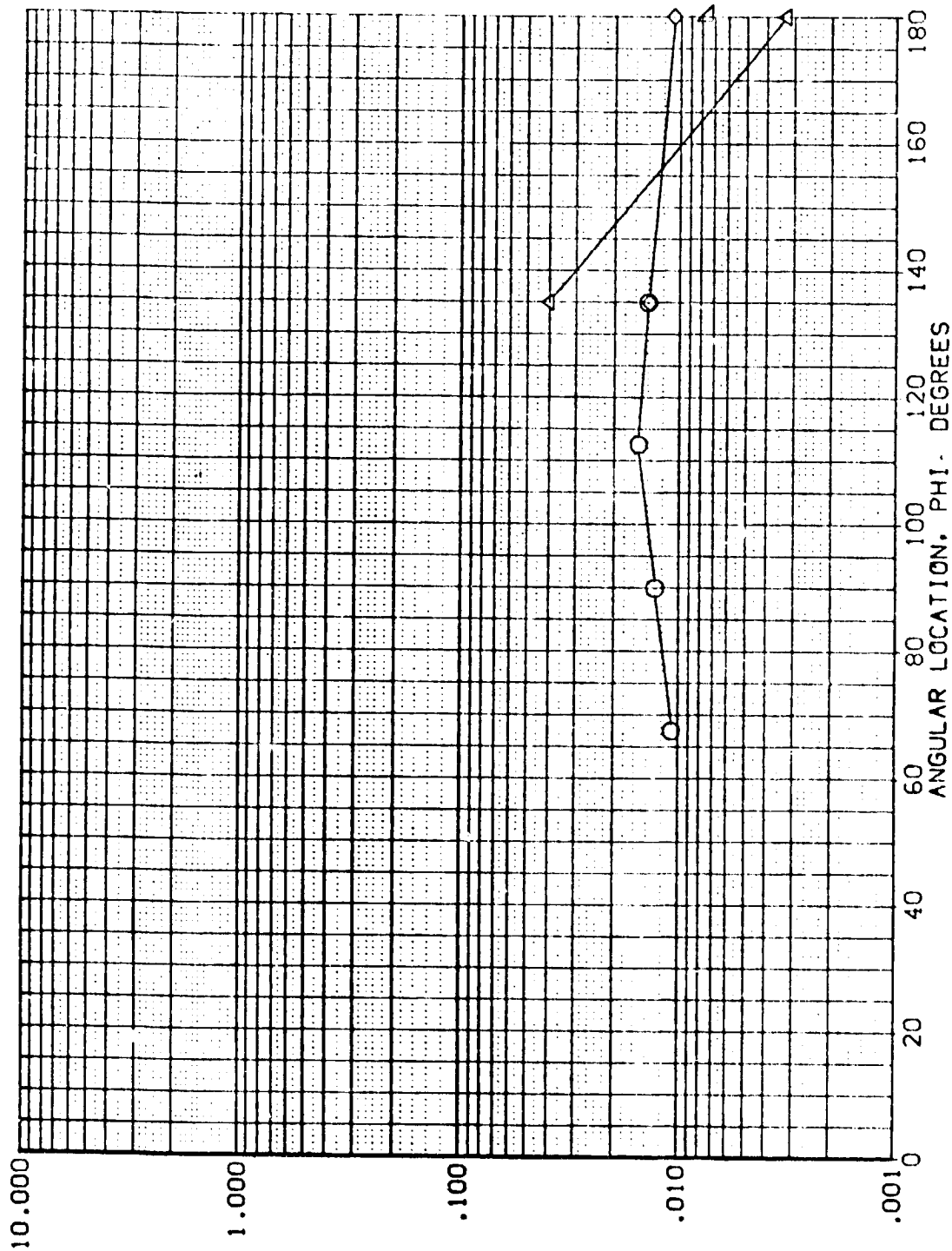


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH ϕ - LARGE TRIPS

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 5.000 DELTAH .115
 X-HT .047

SYMBOL X/L MAX/HT RN/L
 0 1000 4.805
 1 1000 4.805
 2 1000 4.805
 3 1000 4.805
 4 1000 4.805
 5 1000 4.805
 6 1000 4.805
 7 1000 4.805
 8 1000 4.805
 9 1000 4.805
 10 1000 4.805
 11 1000 4.805
 12 1000 4.805
 13 1000 4.805
 14 1000 4.805
 15 1000 4.805
 16 1000 4.805
 17 1000 4.805
 18 1000 4.805
 19 1000 4.805
 20 1000 4.805
 21 1000 4.805
 22 1000 4.805
 23 1000 4.805
 24 1000 4.805
 25 1000 4.805
 26 1000 4.805
 27 1000 4.805
 28 1000 4.805
 29 1000 4.805
 30 1000 4.805
 31 1000 4.805
 32 1000 4.805
 33 1000 4.805
 34 1000 4.805
 35 1000 4.805
 36 1000 4.805
 37 1000 4.805
 38 1000 4.805
 39 1000 4.805
 40 1000 4.805
 41 1000 4.805
 42 1000 4.805
 43 1000 4.805
 44 1000 4.805
 45 1000 4.805
 46 1000 4.805
 47 1000 4.805
 48 1000 4.805
 49 1000 4.805
 50 1000 4.805
 51 1000 4.805
 52 1000 4.805
 53 1000 4.805
 54 1000 4.805
 55 1000 4.805
 56 1000 4.805
 57 1000 4.805
 58 1000 4.805
 59 1000 4.805
 60 1000 4.805
 61 1000 4.805
 62 1000 4.805
 63 1000 4.805
 64 1000 4.805
 65 1000 4.805
 66 1000 4.805
 67 1000 4.805
 68 1000 4.805
 69 1000 4.805
 70 1000 4.805
 71 1000 4.805
 72 1000 4.805
 73 1000 4.805
 74 1000 4.805
 75 1000 4.805
 76 1000 4.805
 77 1000 4.805
 78 1000 4.805
 79 1000 4.805
 80 1000 4.805
 81 1000 4.805
 82 1000 4.805
 83 1000 4.805
 84 1000 4.805
 85 1000 4.805
 86 1000 4.805
 87 1000 4.805
 88 1000 4.805
 89 1000 4.805
 90 1000 4.805
 91 1000 4.805
 92 1000 4.805
 93 1000 4.805
 94 1000 4.805
 95 1000 4.805
 96 1000 4.805
 97 1000 4.805
 98 1000 4.805
 99 1000 4.805
 100 1000 4.805

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS - H/HREF

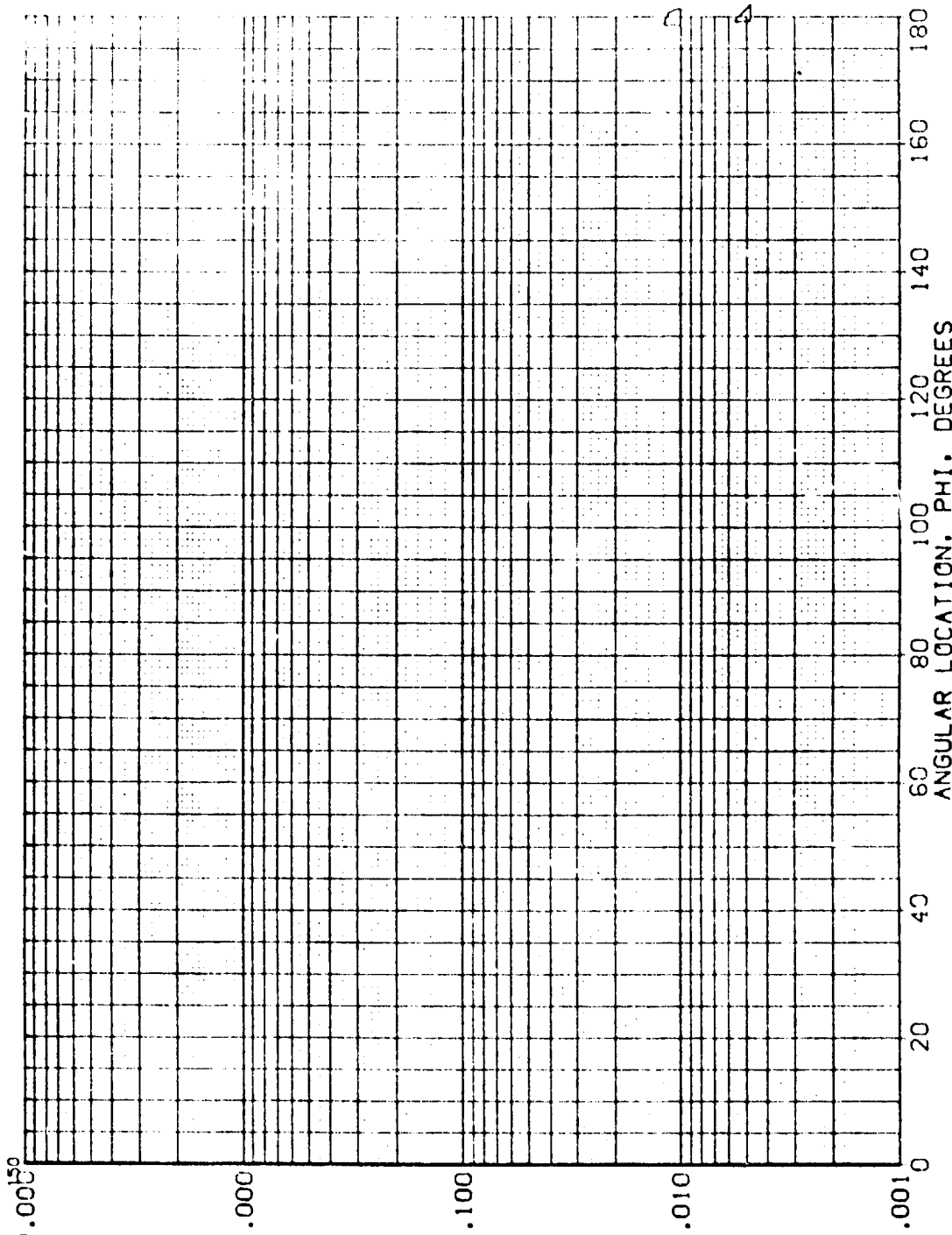


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES	
ALPHA	-5.000
BETA	6.000
MACH	.175
X-HT	.047

HAW/HT RN/L
.900 4.635

SYMBOL X/L
□ .200
□ .250
□ .300
□ .350
□ .375
□ .400

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

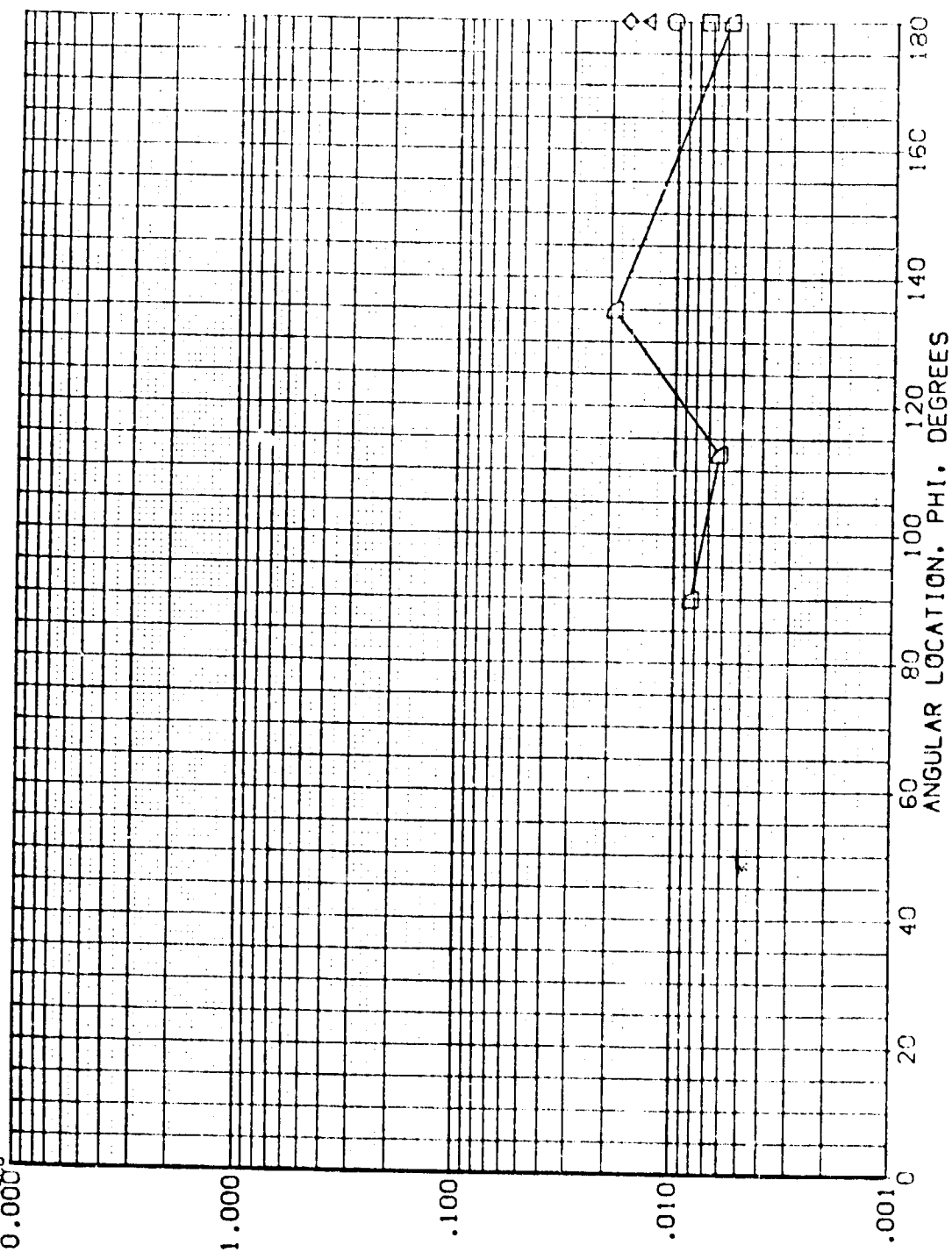


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XOMT06)

SYMBOL X/L

HAB/HT AN/L
 .425 .900 4.805
 .450
 .475
 .500
 .525

PARAMETRIC VALUES
 ALPHA
 MACH
 X-HT
 -5.000
 6.000
 .047
 .000
 .000

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

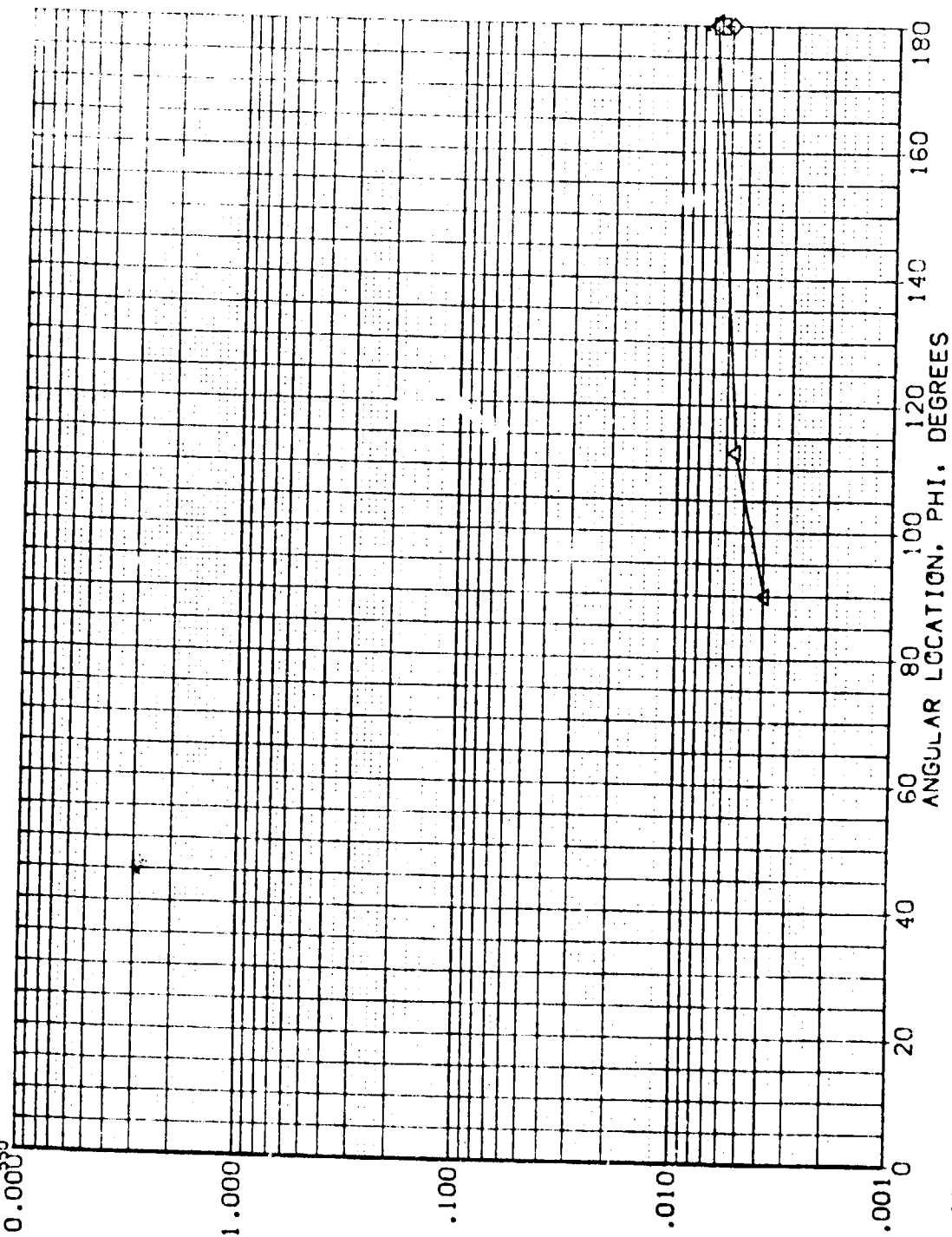


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .047

SYMBOL X/L HAW/HT RN/L
 ▽ .600
 ◊ .650
 ◻ .700
 ◻ .800
 ◻ .900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

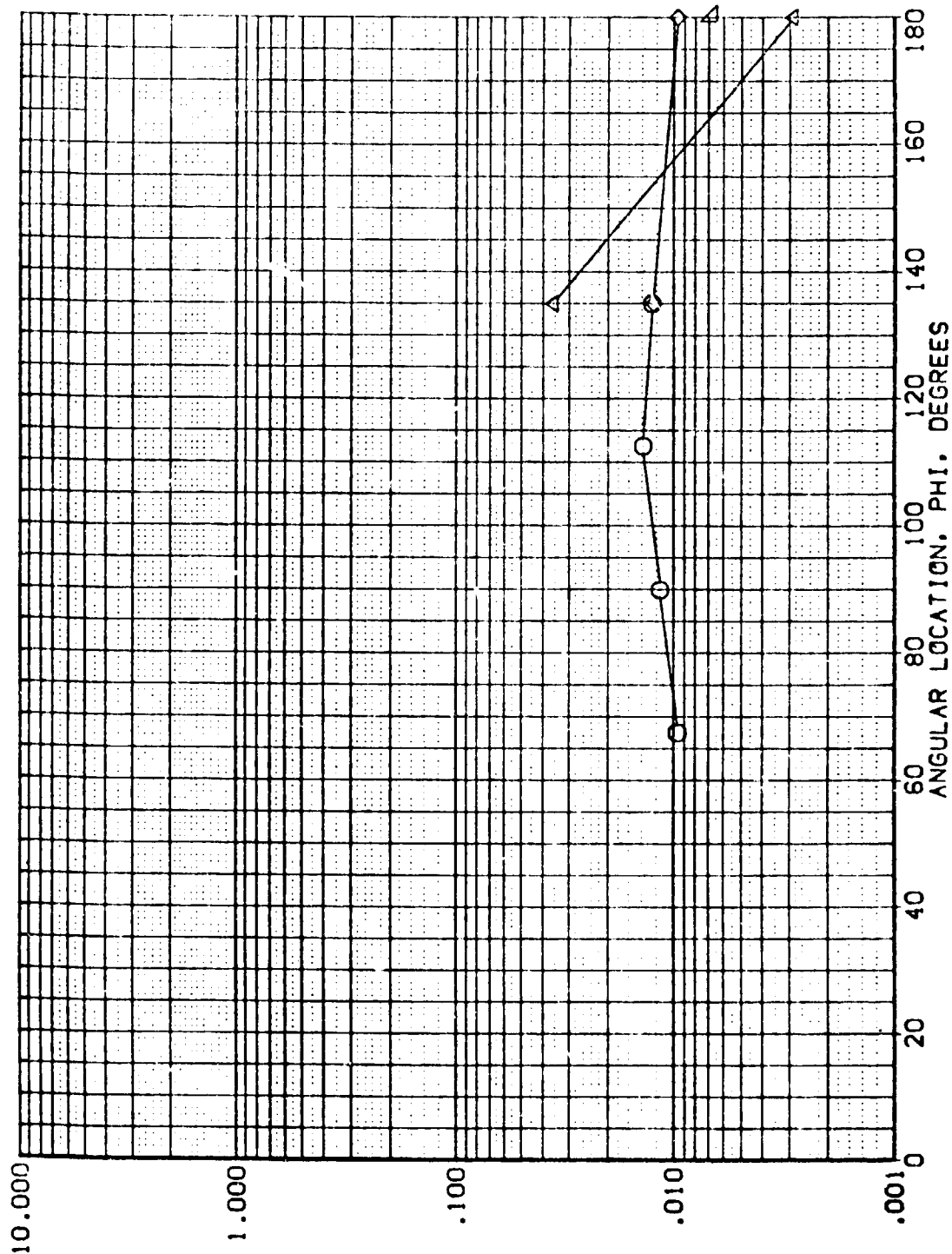


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL
 □ ◇ ◆ ▲ ▽

K/L
 .000
 .010
 .020
 .060
 .100

HAW/HT
 1.000

RN/L
 4.805

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 5.000
 X-HT .047
 BETA .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

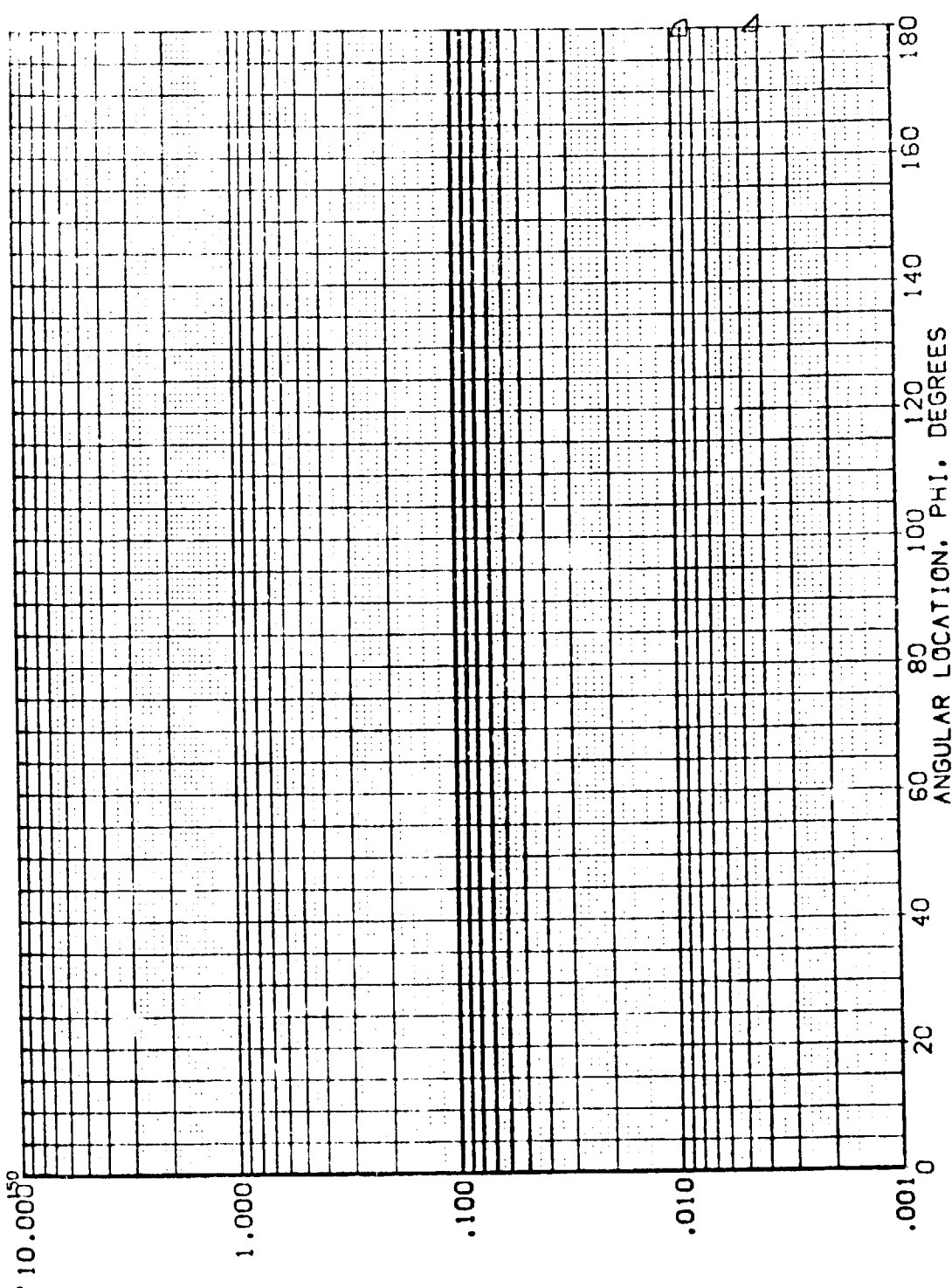


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL X/L
 □ .200
 ◇ .250
 △ .300
 ○ .350
 ◊ .375

MAW/HT 1.000
 RN/L 4.805

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .047
 BETA .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

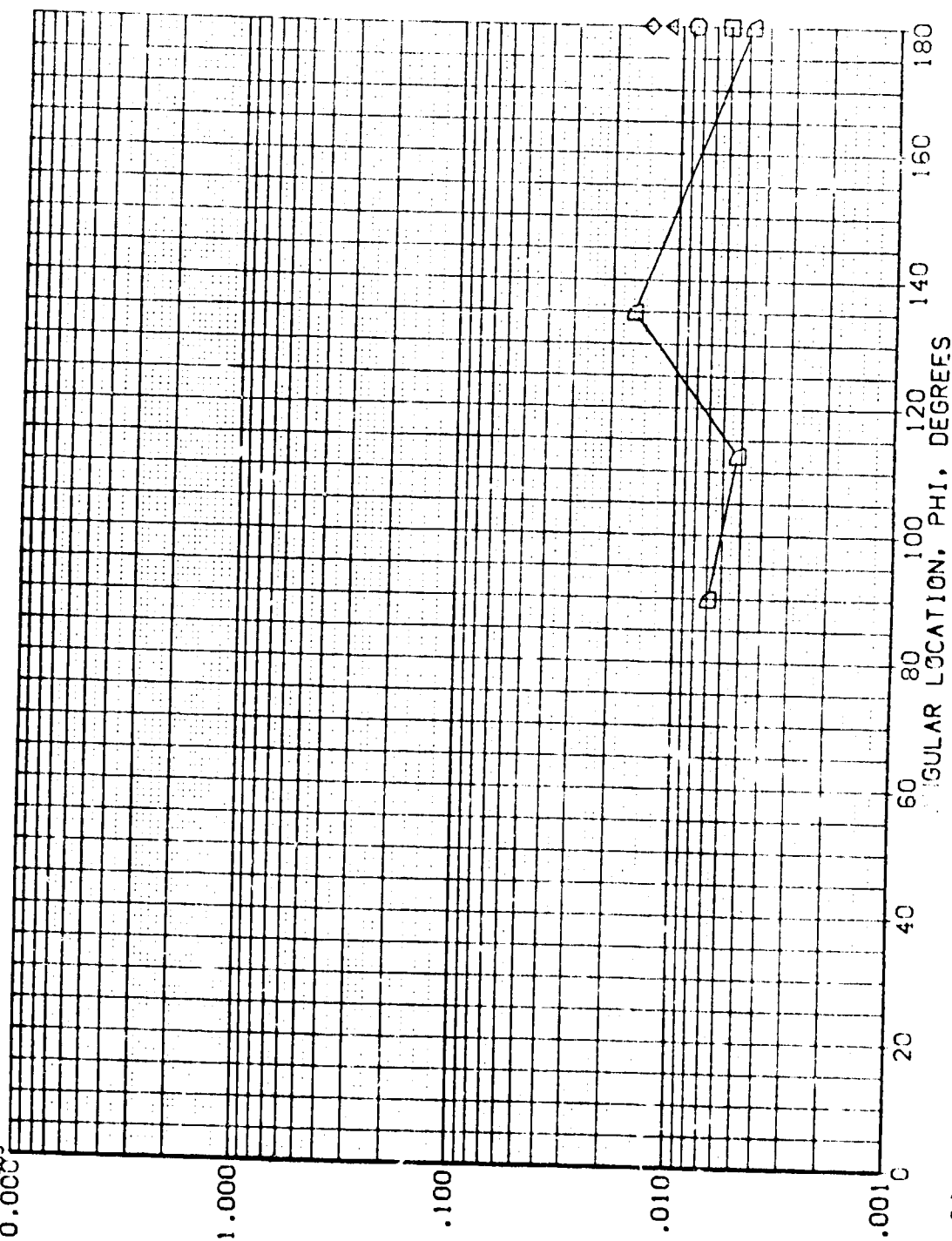


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH ϕ - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL X/L
 ▽ .425
 ▽ .450
 ▽ .475
 ▽ .500
 ▽ .525

HAB/HT RN/L
 1.000 4.805

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .047
 BETA .000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

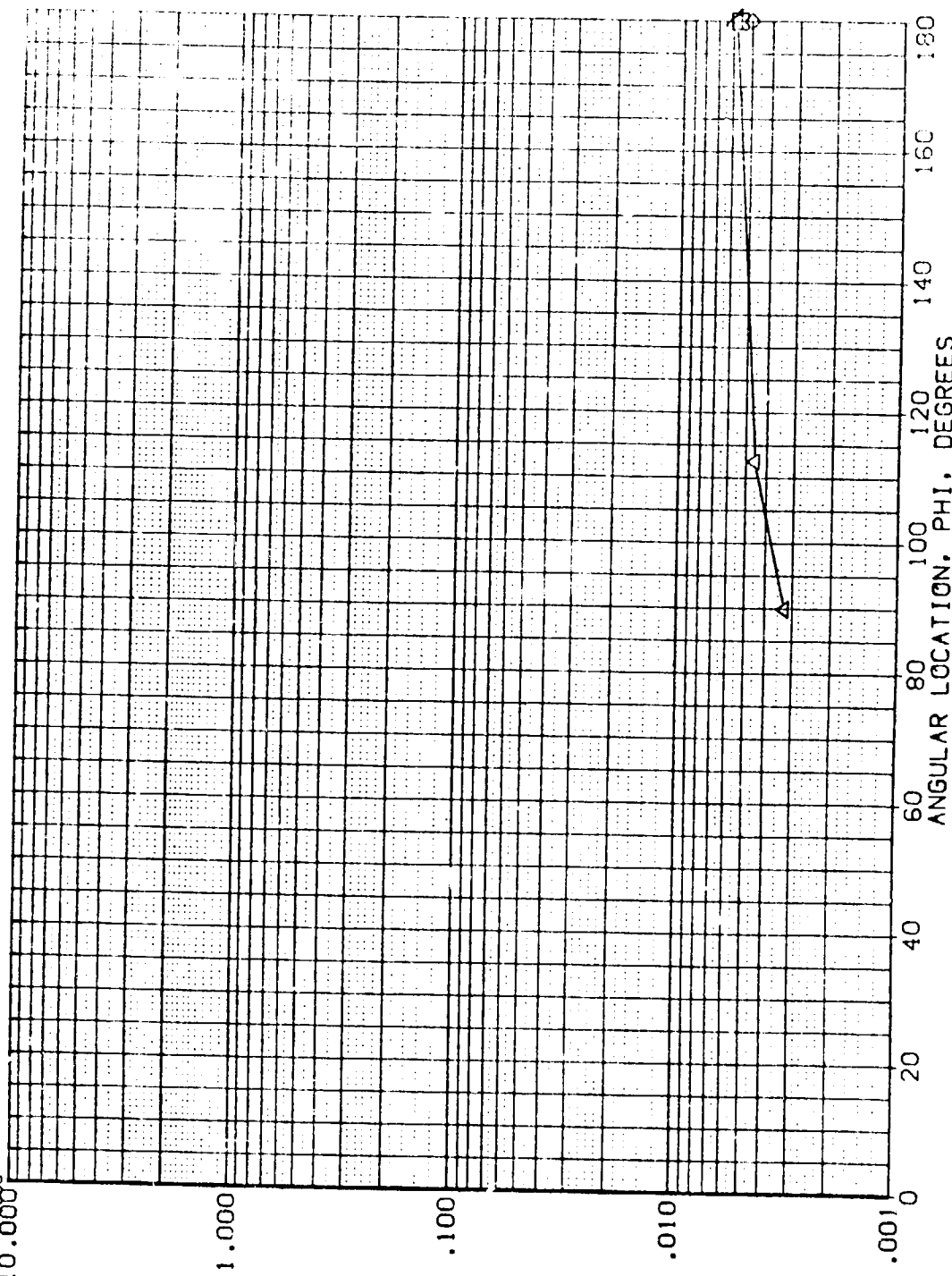


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH PHI - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (XQMT06)

SYMBOL X/L HAW/HT RN/L
 7400 .600 1.000 4.805
 0000 .650
 0000 .700
 0000 .800
 0000 .900

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAM .175
 X-HT .047

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

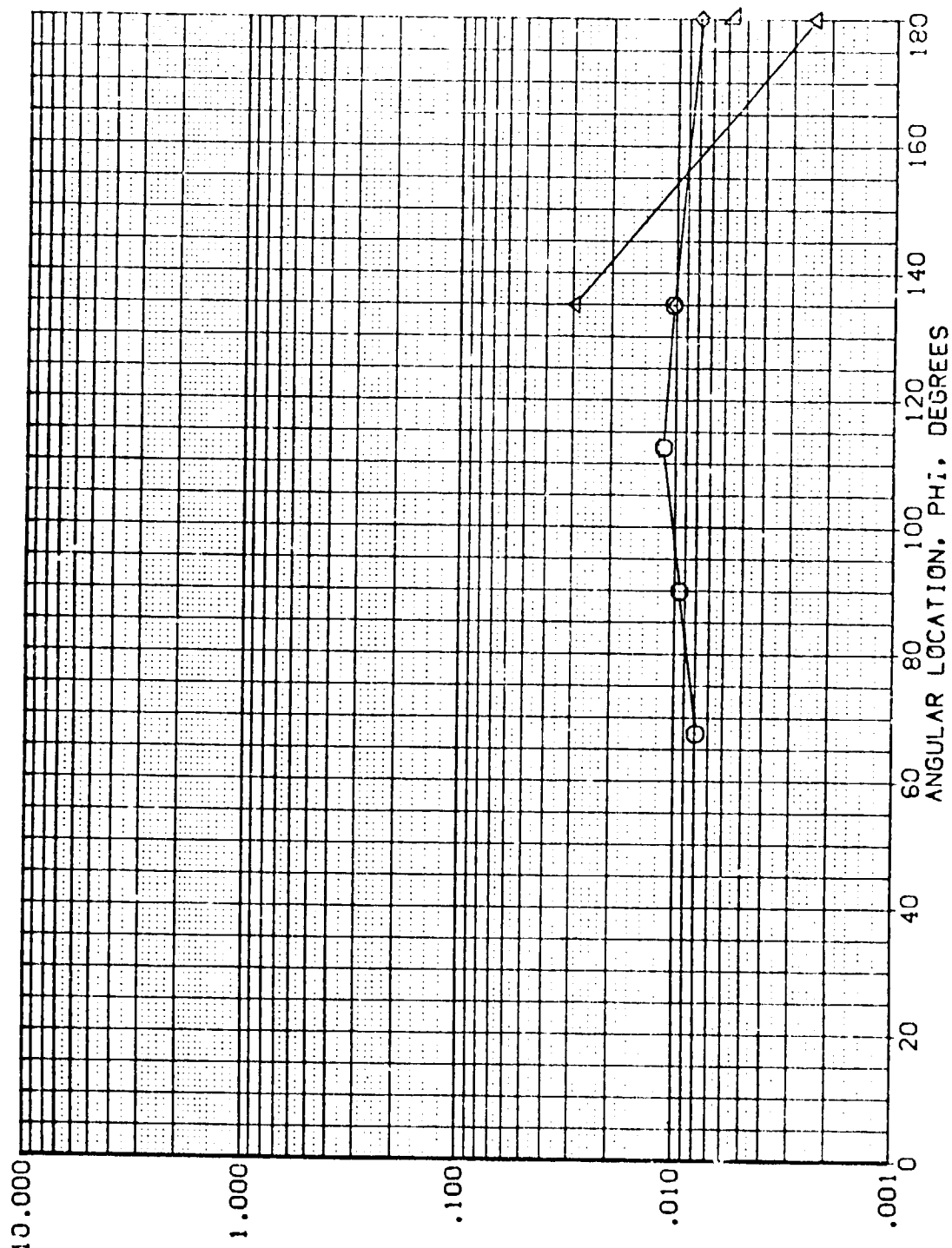


FIG 22 ORBITER + ET - ET DATA - VARIATION WITH ϕ - LARGE TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RCMT12)

SYMBOL X/L HAW/HT RN/L
 0.200
 0.250
 0.300
 0.350
 0.375

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 X-WY .031
 BETA .000
 DELTAM .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

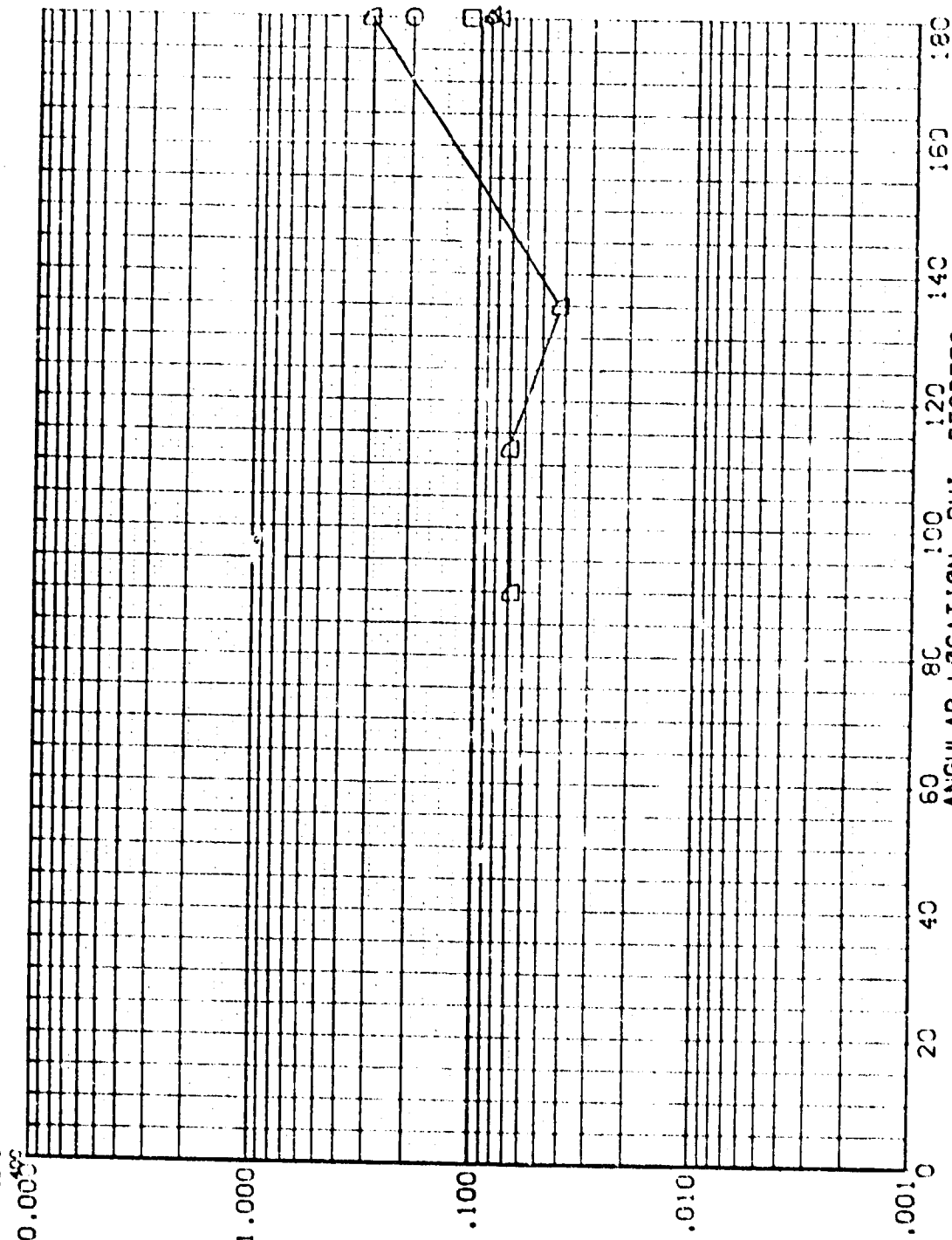


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

SYMBOL X/L HAW/HT RN/L
 0.425
 0.450
 0.475
 0.500
 0.525

PARAMETRIC VALUES
 ALPHA .000
 BETA .000
 MACH 6.000
 DELTAH .031
 X-HT .000

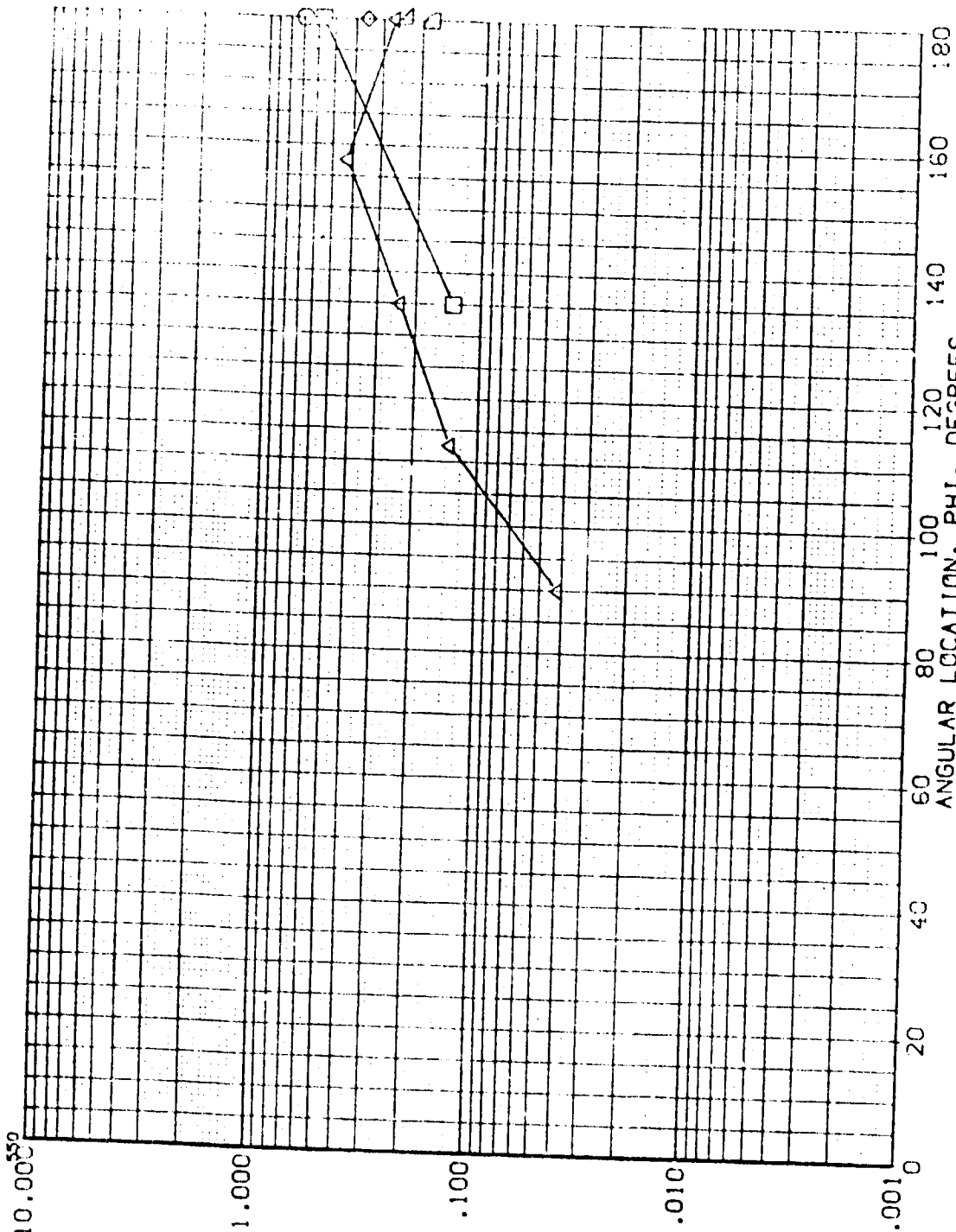


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

1H18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

PARAMETRIC VALUES
 .000 BETA
 .000 DELTA
 6.000 MACH
 .031 X-HT

SYMBOL X/L HAM/HT RN/L
 .600
 .650
 .700
 .800
 .900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

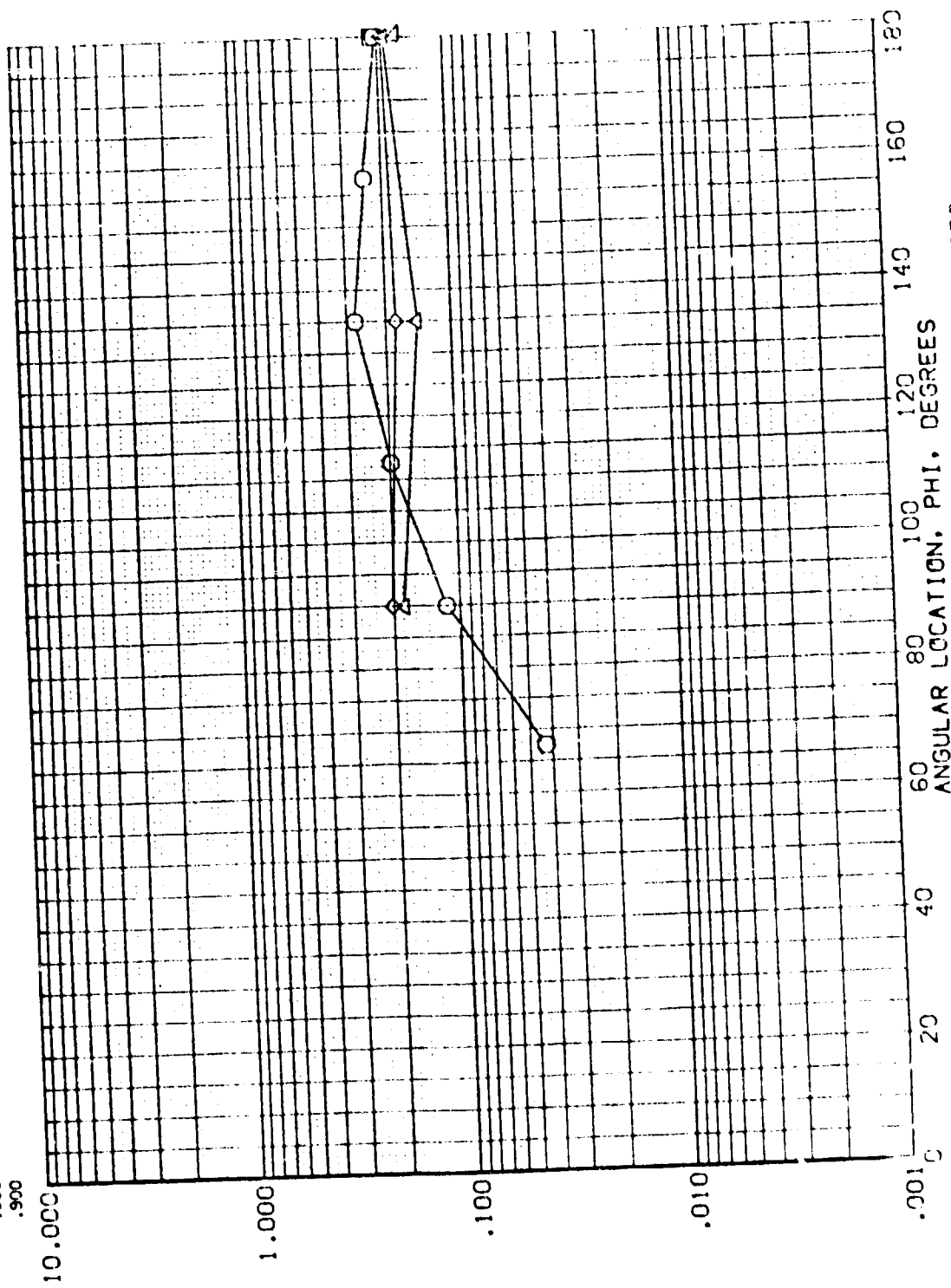


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH Φ - SMALL TRIPS

1H18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL X/L HAW/HT RW/L
 .000
 .010
 .020
 .060
 .100

PARAMETRIC VALUES
 ALPHA .000
 MACH 5.000
 X-HT .031
 BETA .002
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

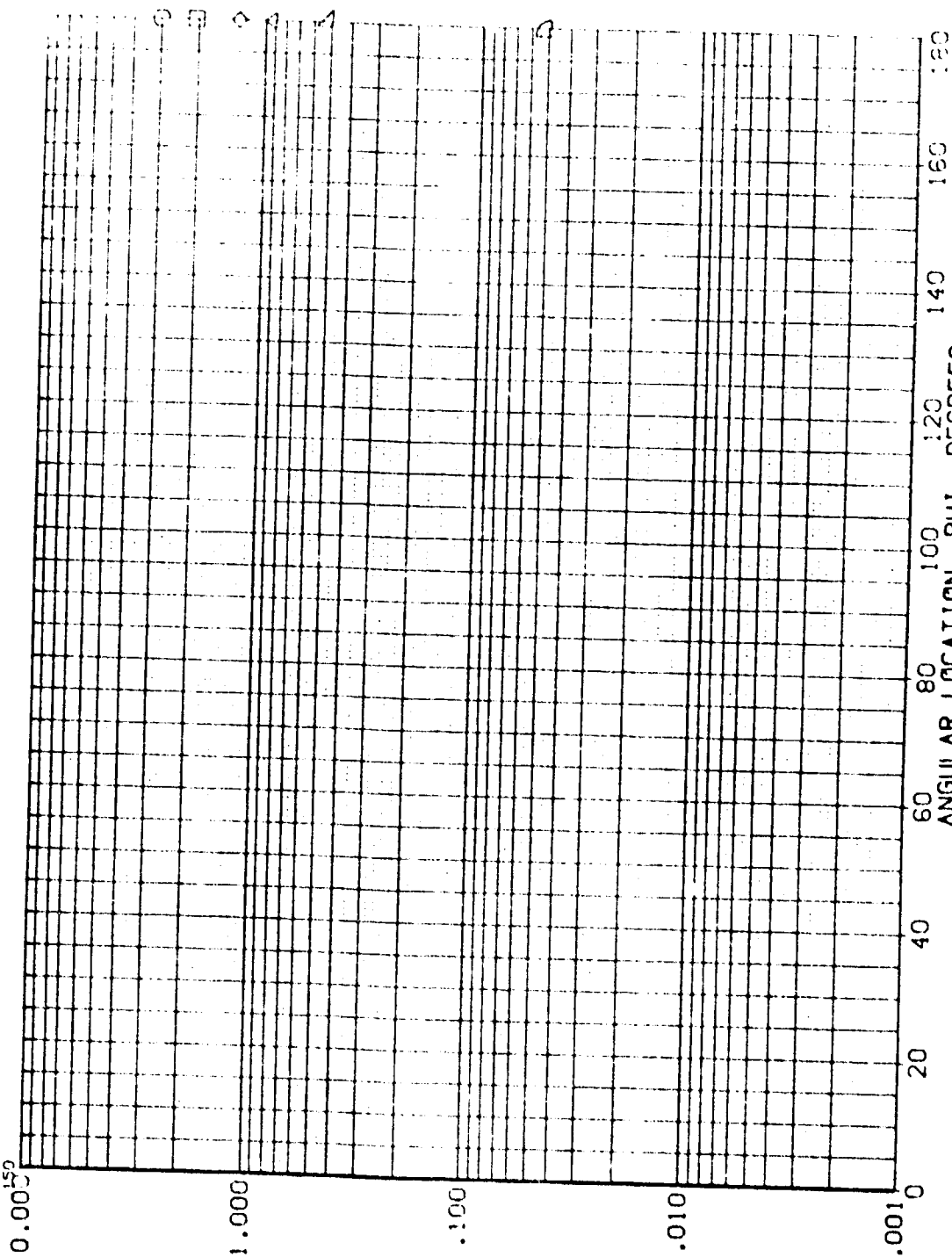


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

(RQMT!2)

7/7

HAW/HT	RN/L
.900	4.643

PARAMETRIC VALUES

ALPHA
MACH
X-MT

BETA	.000	.000
DELTA	6.000	.175
	.031	

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

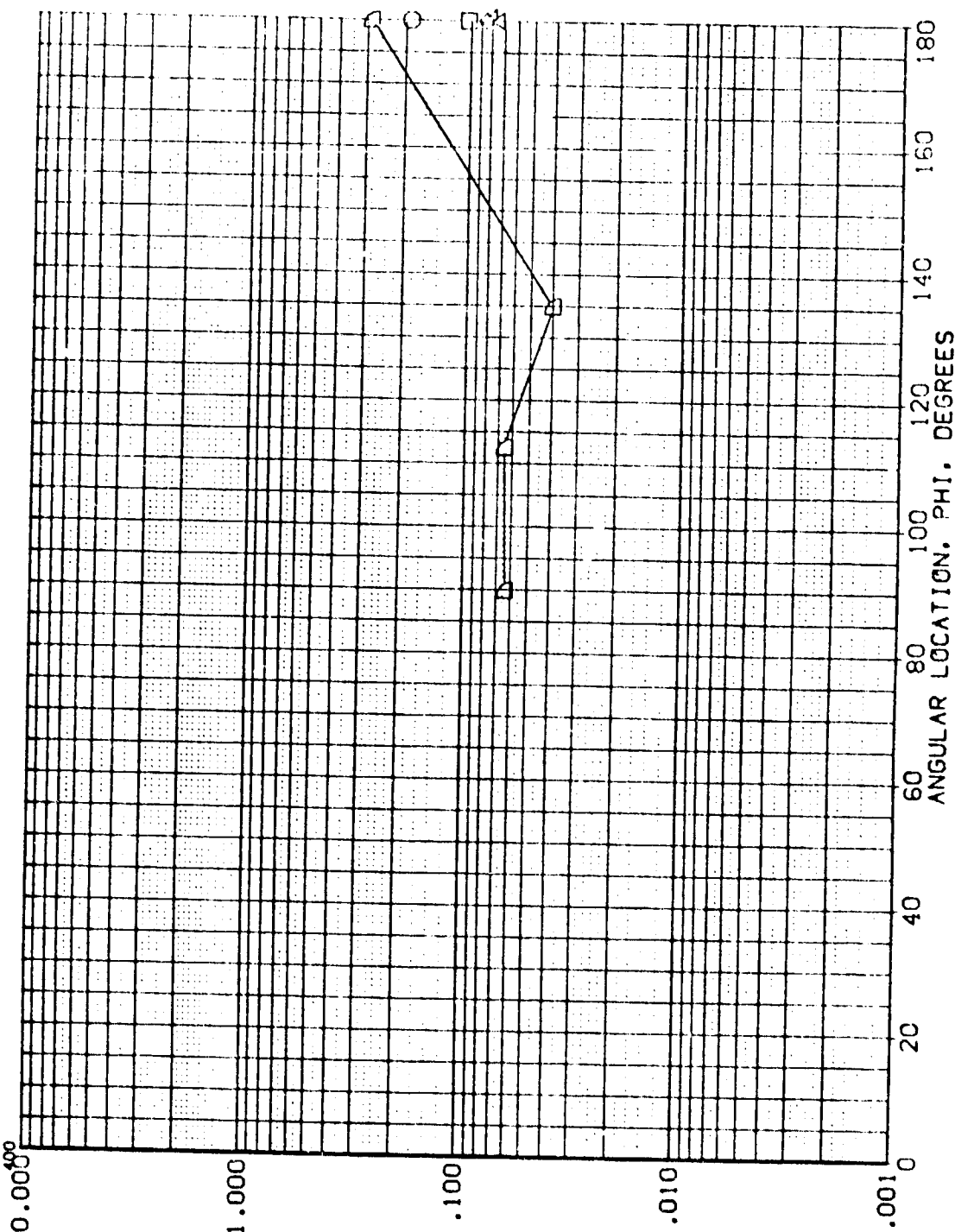


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

1H18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL X/L HAW/WT RN/L
 □ .425
 □ .450
 □ .475
 □ .500
 □ .525
 □ .550

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 X-HT .031
 BETA .000
 DELTAH .175

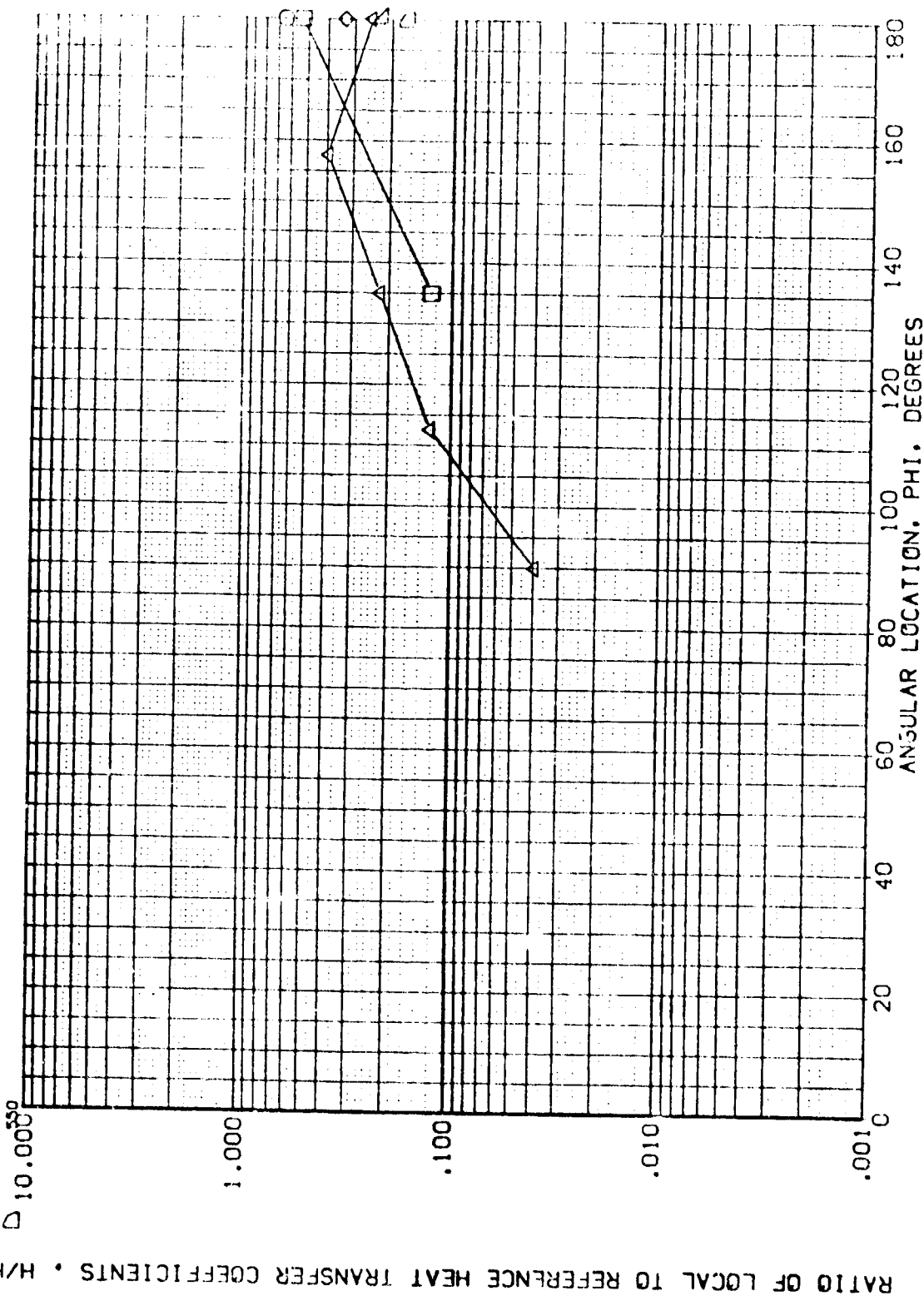


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL X/L HAW/HT RN/L
 ▽ .600
 ◇ .650
 □ .700
 ○ .800
 △ .900

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 X-HT .031
 BETA .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

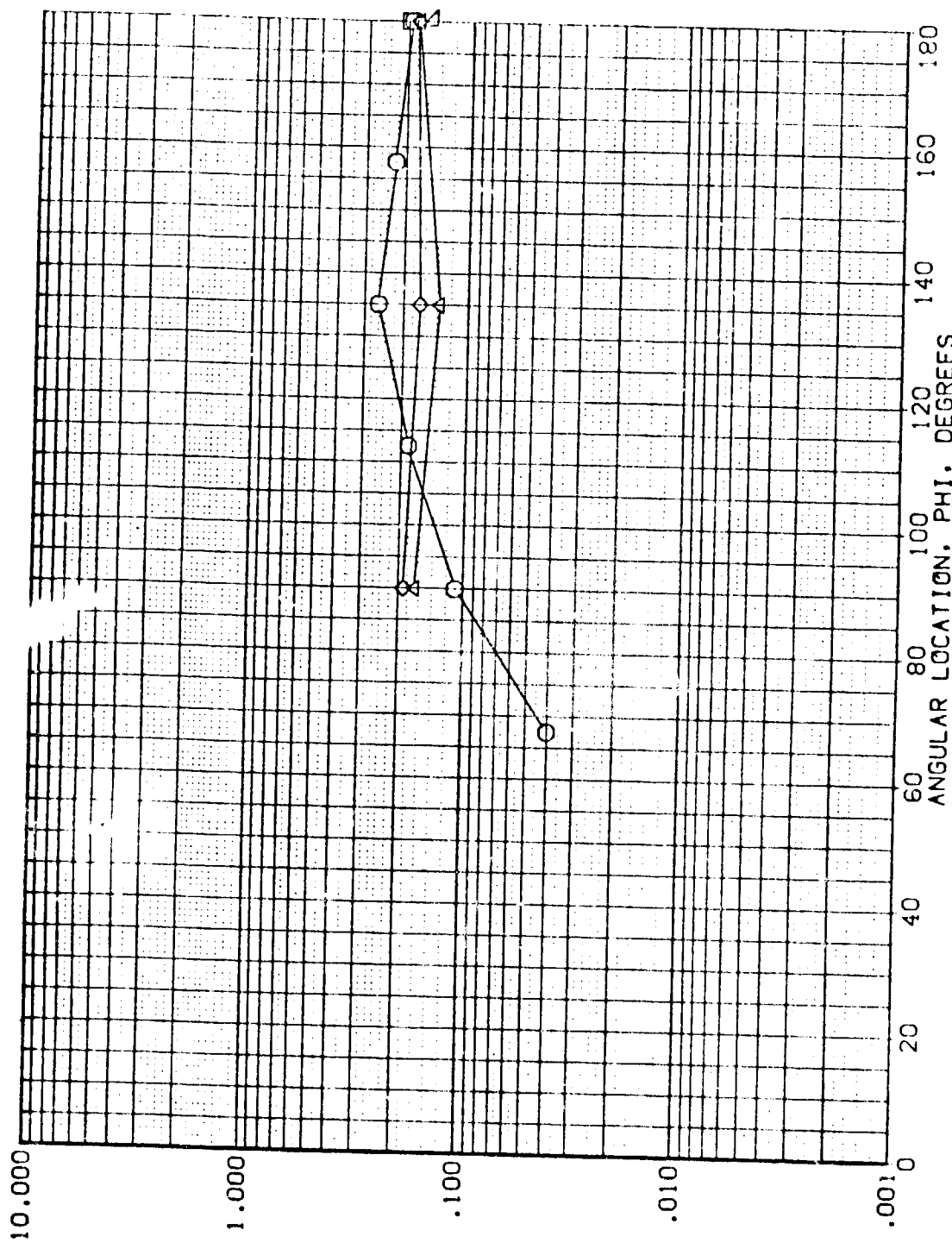


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL X/L HAW/HT RN/L

□ .000
 □ .010
 ◇ .020
 △ .060
 ▽ .100

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 X-NT .031

BETA .000
 DELTAH .195

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

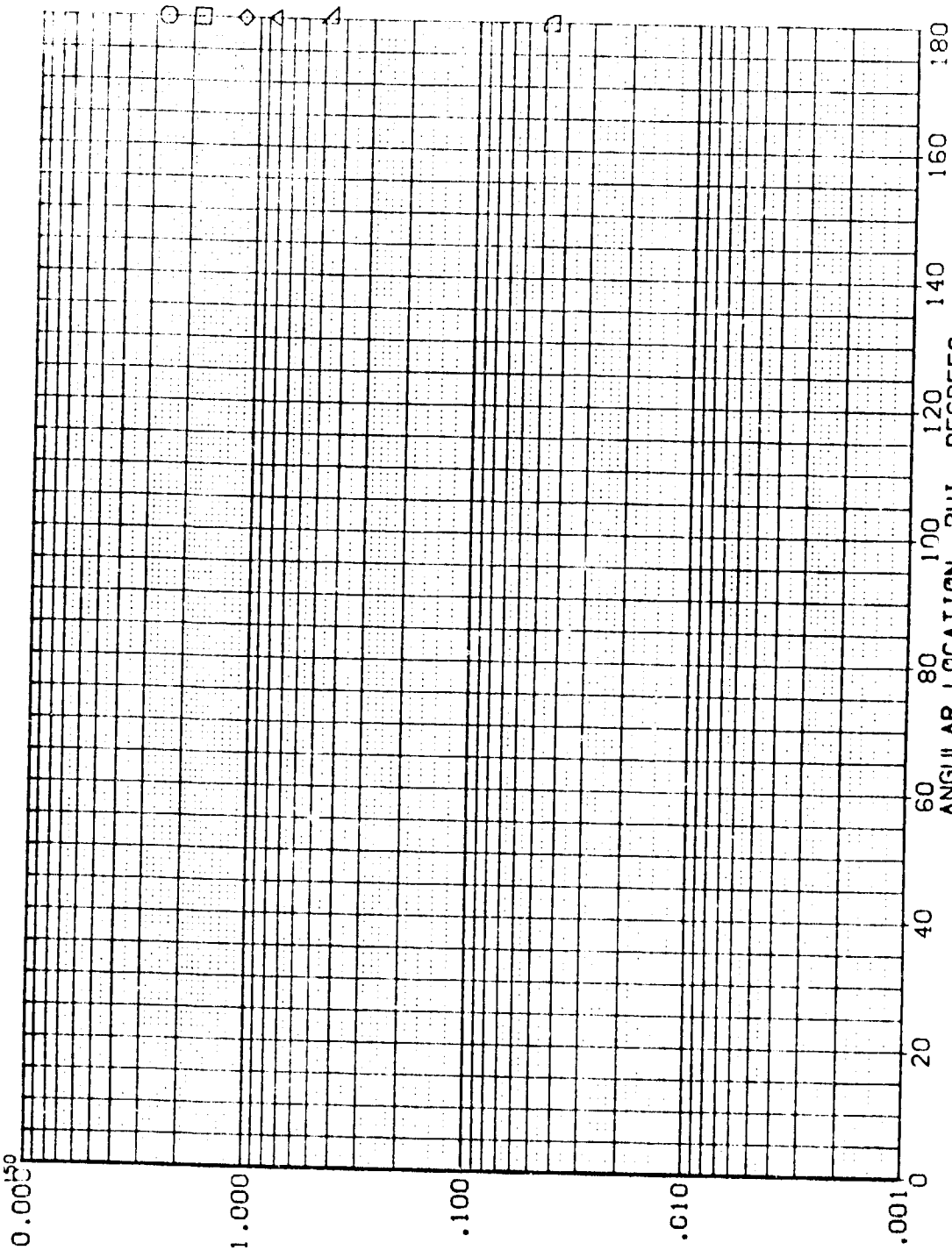


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

PARAMETRIC VALUES
 ALPHA .000
 MACH 6.000
 X-HT 331
 BETA .000
 DELTAH .175

SYMBOL X/L HAW/HT RN/L
 0.200
 0.250
 0.300
 0.350
 0.375
 0.400
 4.643

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

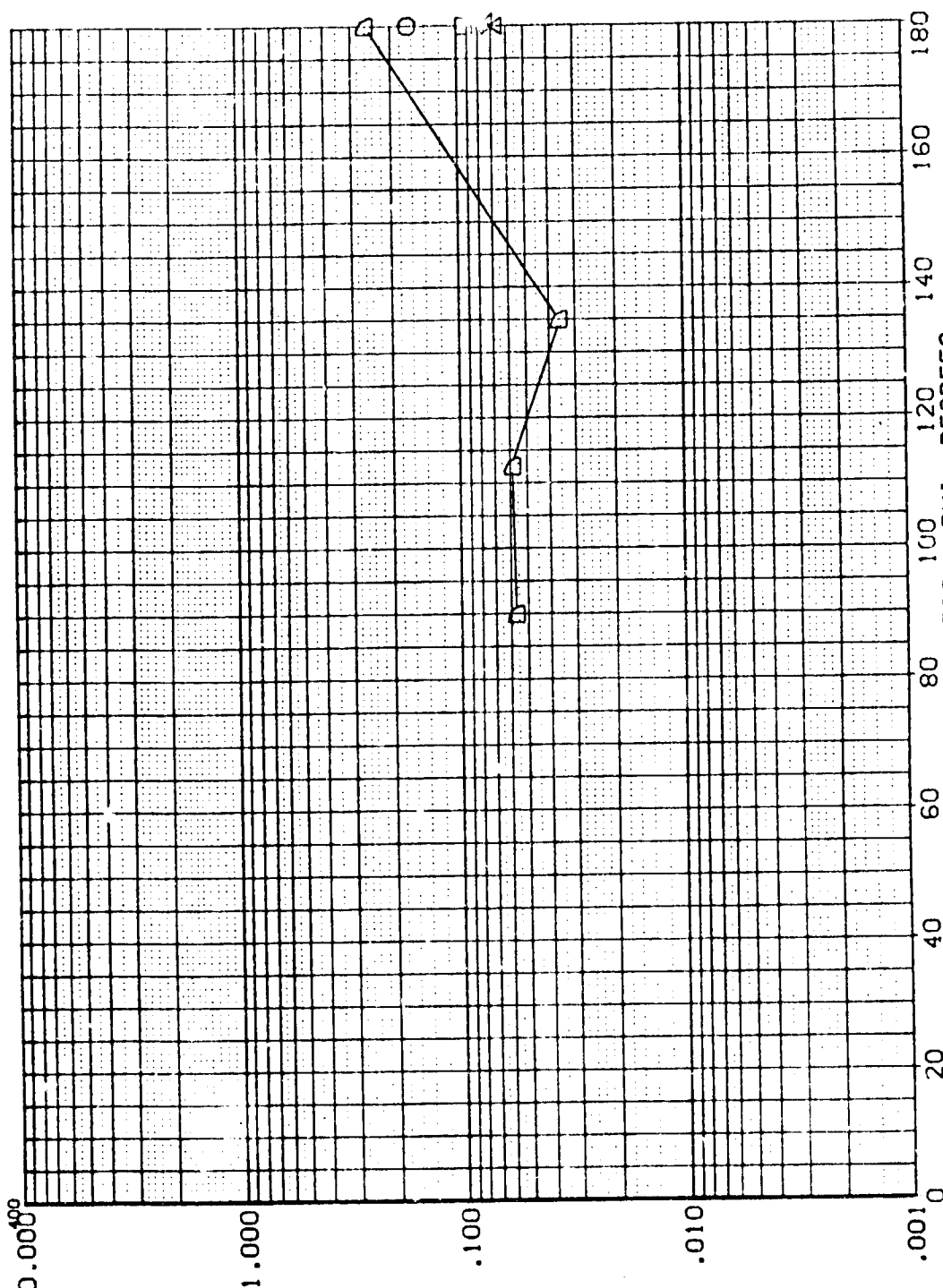


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL X/L HAW/WT RN/L

□ .425
 ◇ .450
 △ .475
 ○ .500
 ○ .525
 ○ .550

PARAMETRIC VALUES
 ALPHA .003
 MACH 6.000
 X-HT .03

BETA .003
 DELTA .003

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

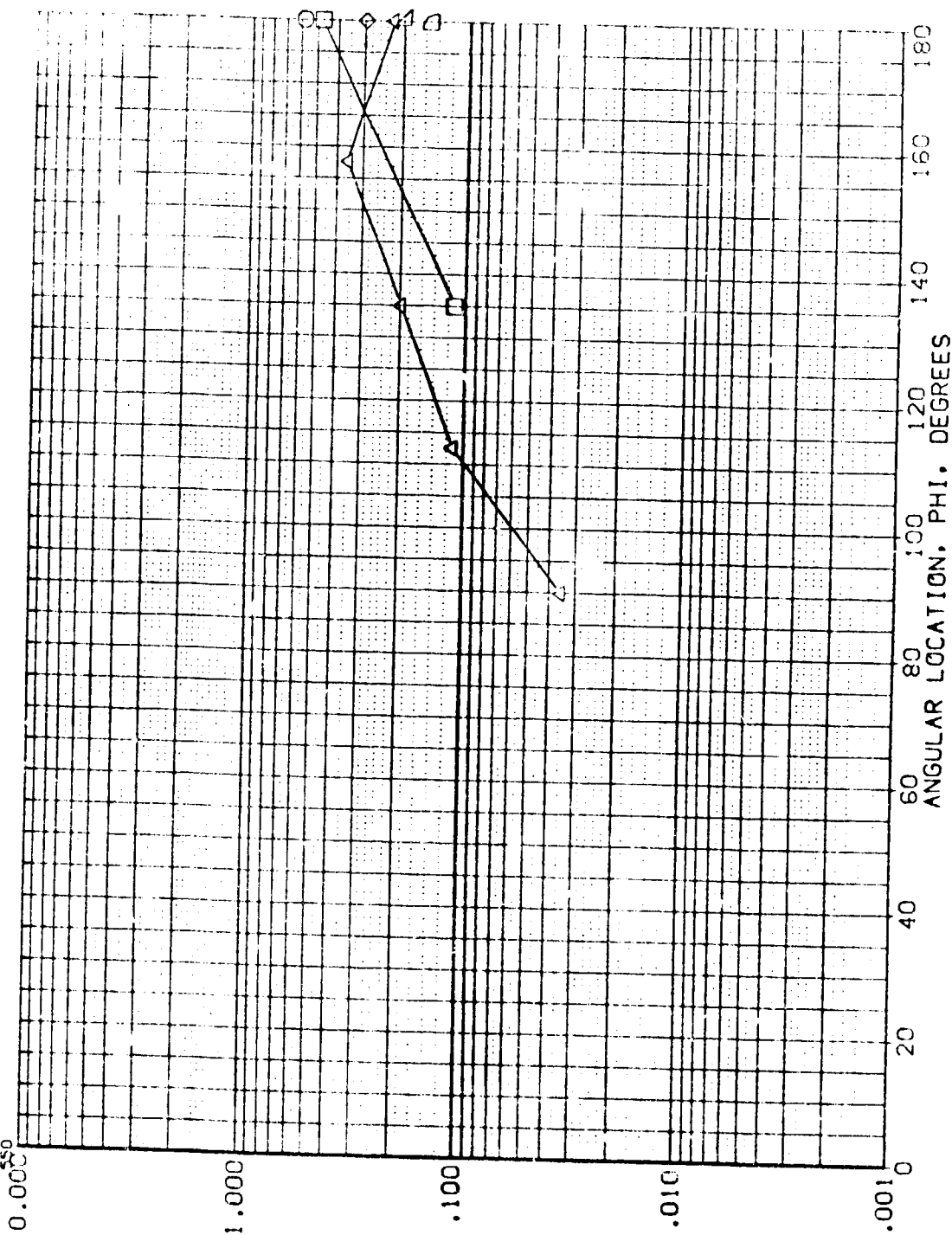


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 810C5D7W97M3F4V5 T8 X26 EXTERNAL TANK (RQMT12)

SYMBOL	X/L	HAW/HT	RN/L	PARAMETRIC VALUES			
				ALPHA	BETA	DELTA	
○	.600	1.000	4.643	.000	.000	.175	
◇	.650			6.000			
□	.700			.031			
△	.800						
▽	.900						

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

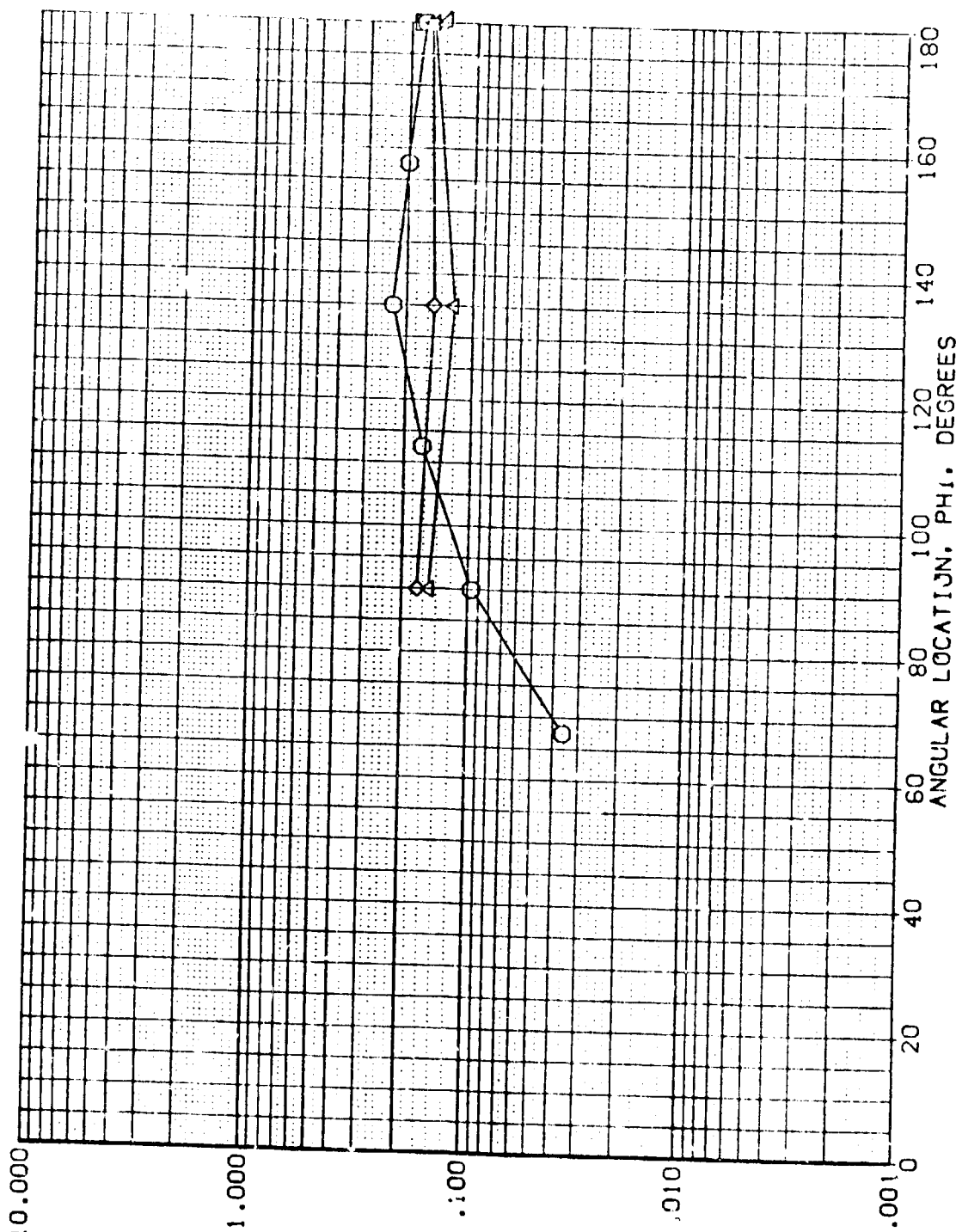


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

1H18 B10C507W87M1F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L
 0.000
 0.010
 0.020
 0.050
 0.100
 0.150

PARAMETRIC VALUES
 ALPHA
 MACH
 X-HT
 -5.000
 6.000
 .031
 BETA
 DELTAM

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

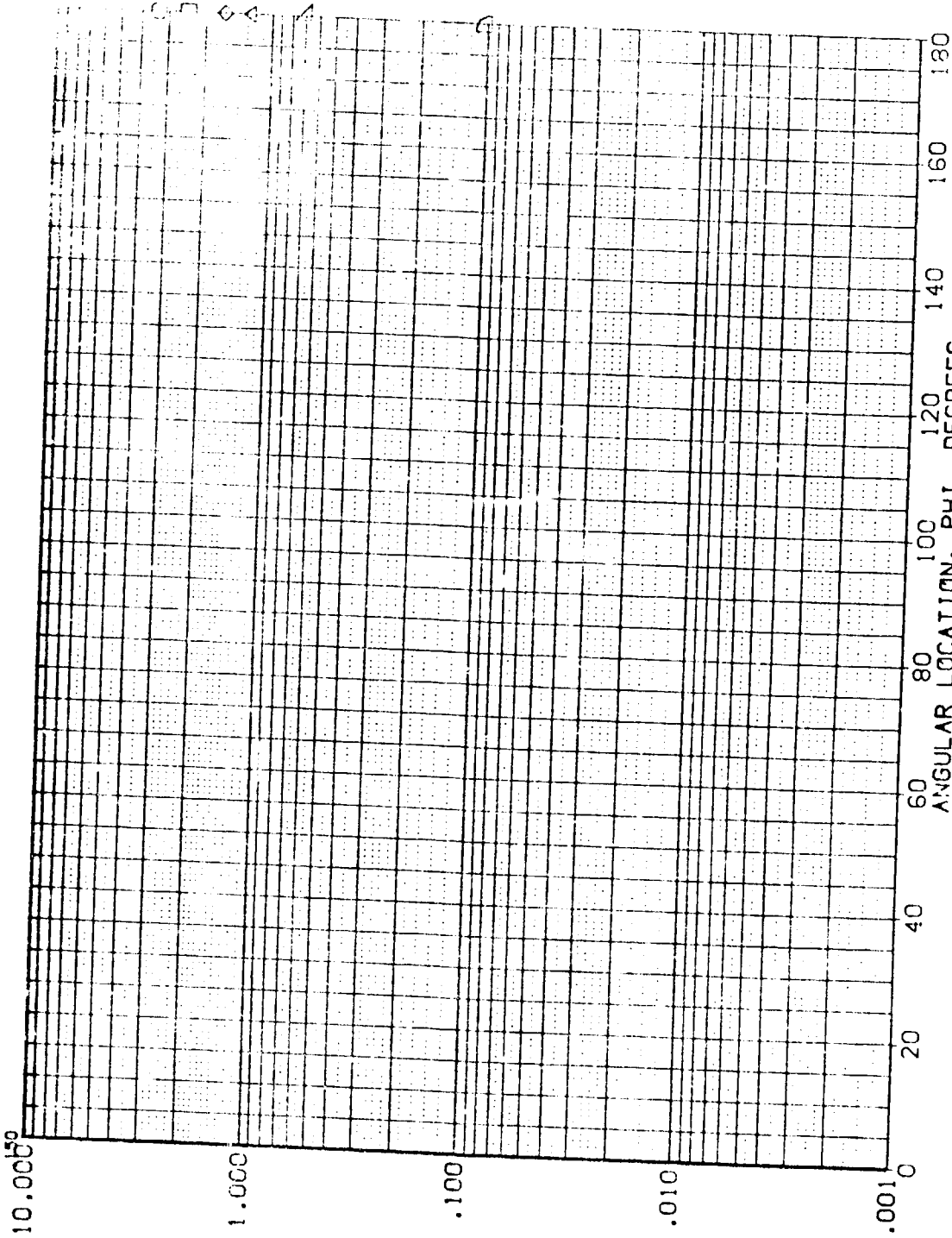


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL	X/L	MAW/HT	RN/L	PARAMETRIC VALUES
□	.200	.850	4.424	ALPHA
◇	.250			MACH
◇	.300			X-HT
◇	.350			
◇	.375			
◇				BETA
◇				DELTA
◇				

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

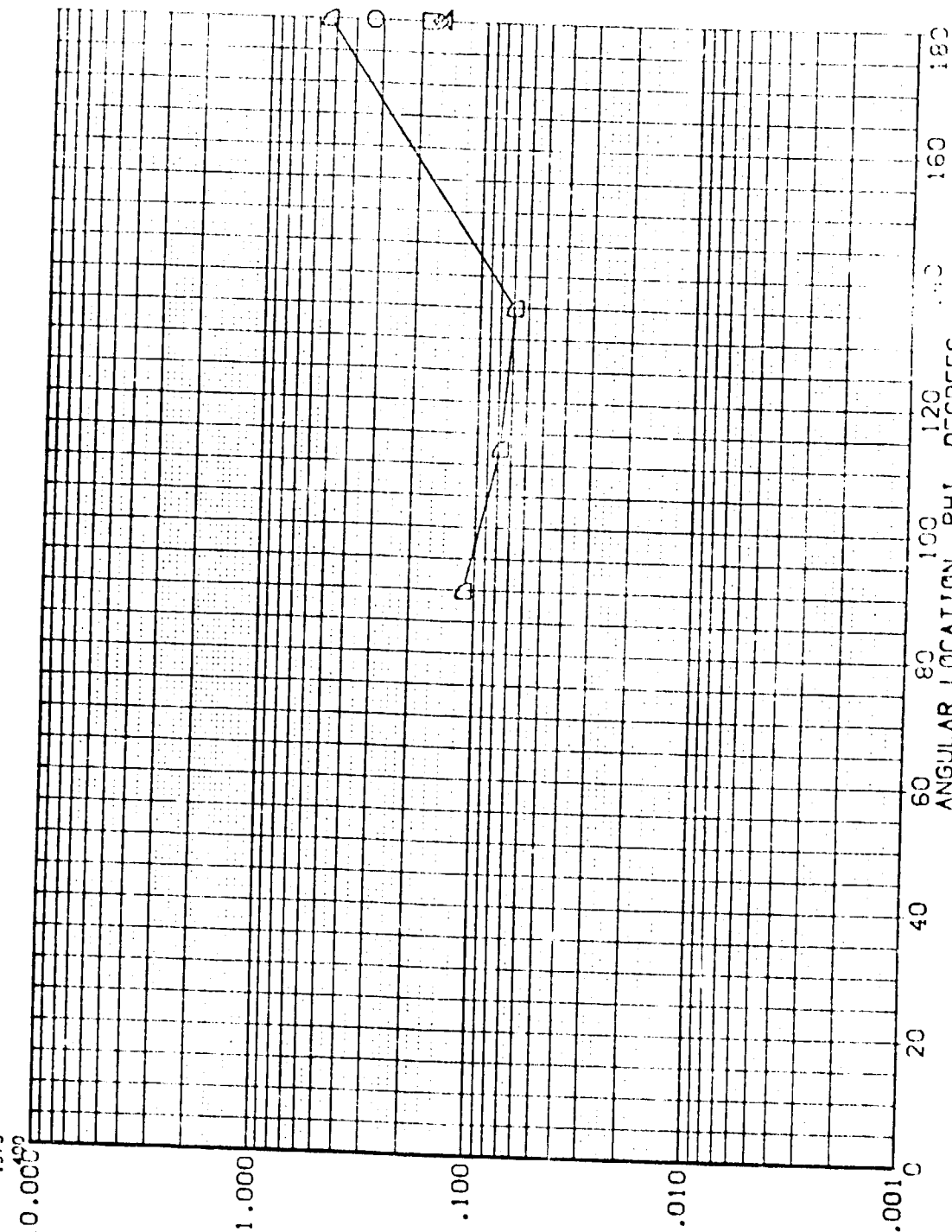


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

HI18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L MACH/HT RN/L

□ .425 .850 4.424
 ◇ .450
 △ .475
 ○ .500
 ○ .525

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .031
 BETA
 DELTA

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

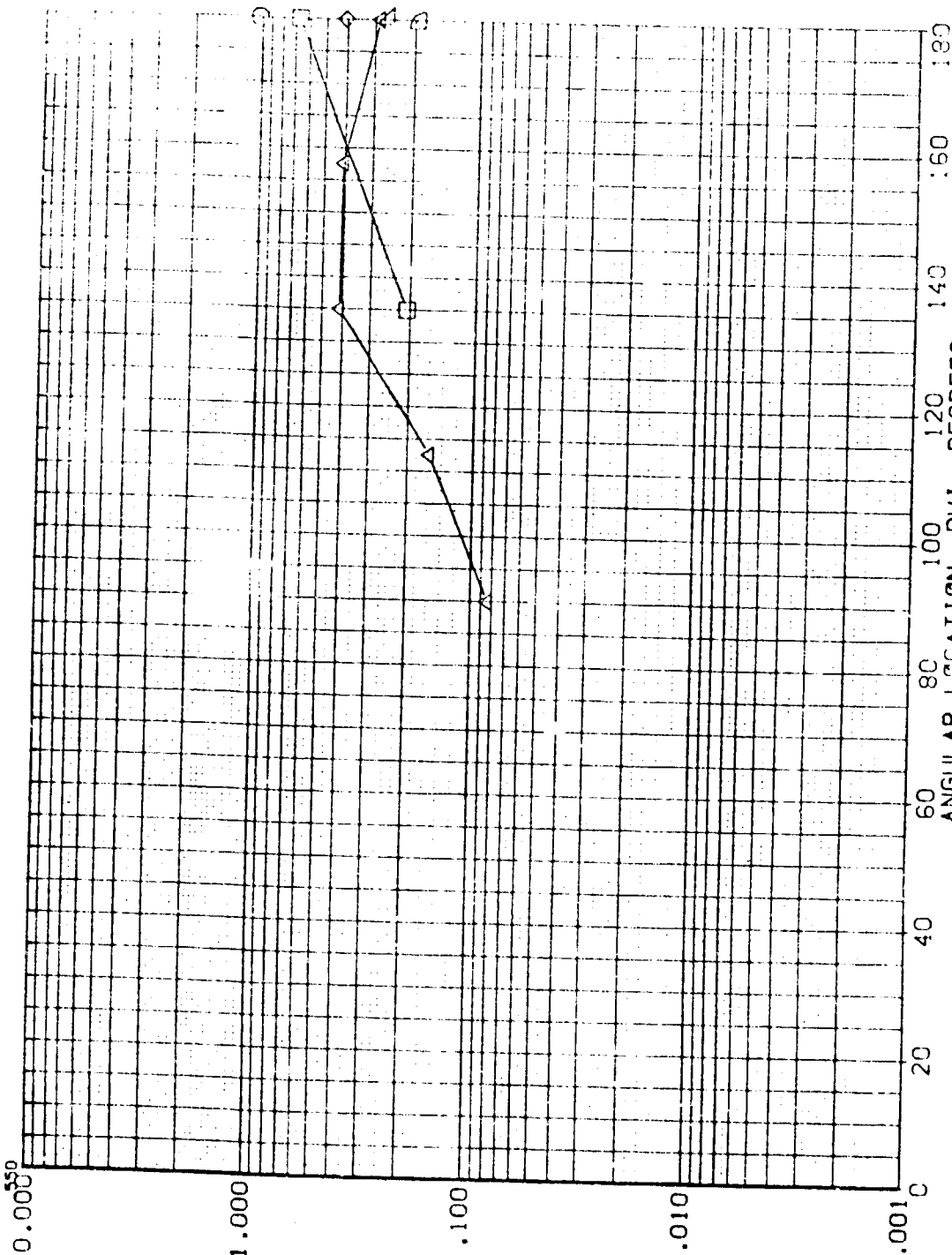


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

1H18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L
 □ .600 .850 4.424
 □ .650
 □ .700
 □ .800
 □ .900

PARAMETRIC VALUES
 ALPHA -5.000 BETA .000
 MACH 6.000 DELTAH .175
 X-HT .331

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

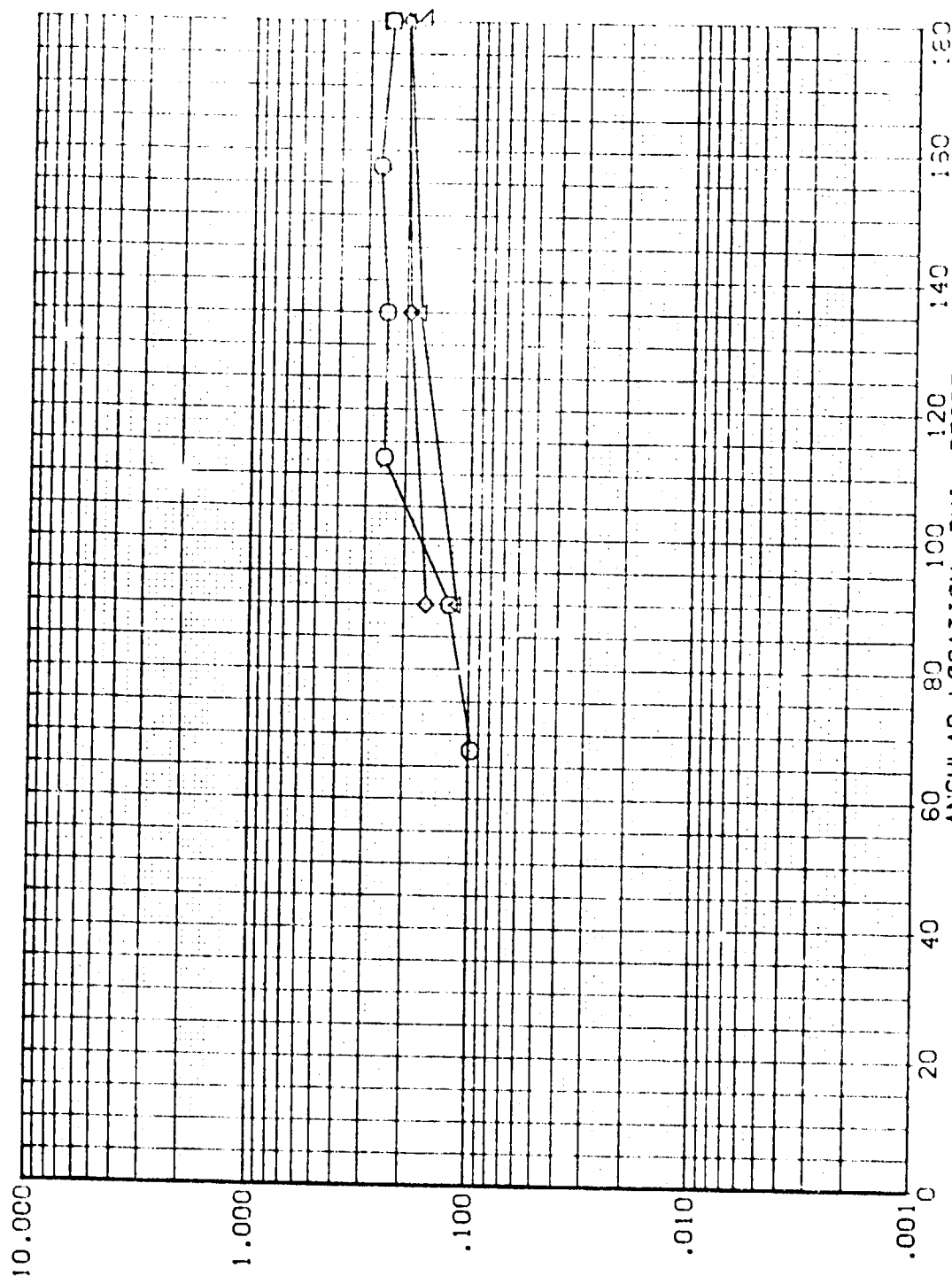


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L

PARAMETRIC VALUES
 ALPHA -5.000
 BETA .000
 MACH 5.000
 DELTAH .031
 X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

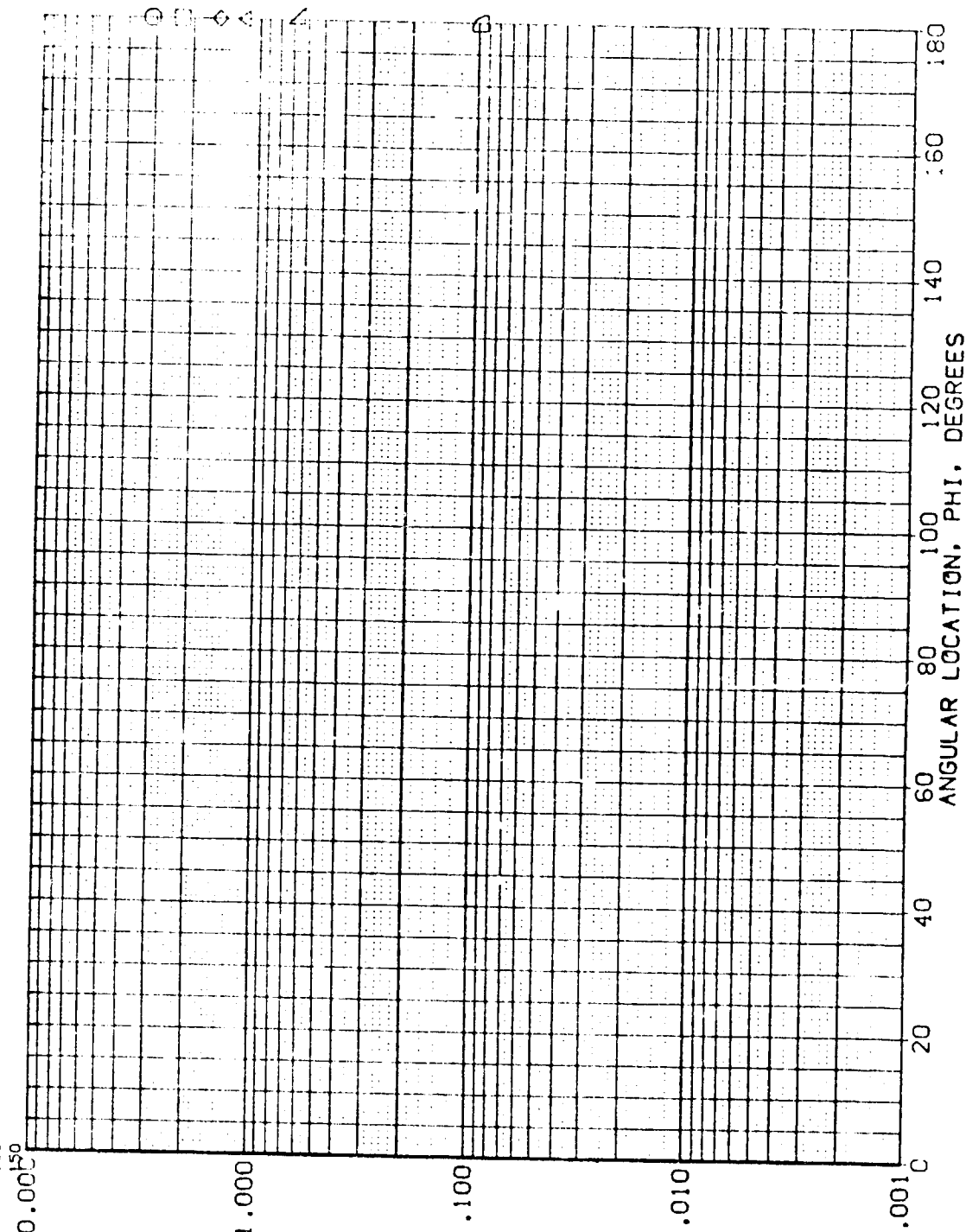


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L
 □ .200
 ◇ .250
 △ .300
 ○ .350
 △ .375

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .031
 BETA .000
 DELTA .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

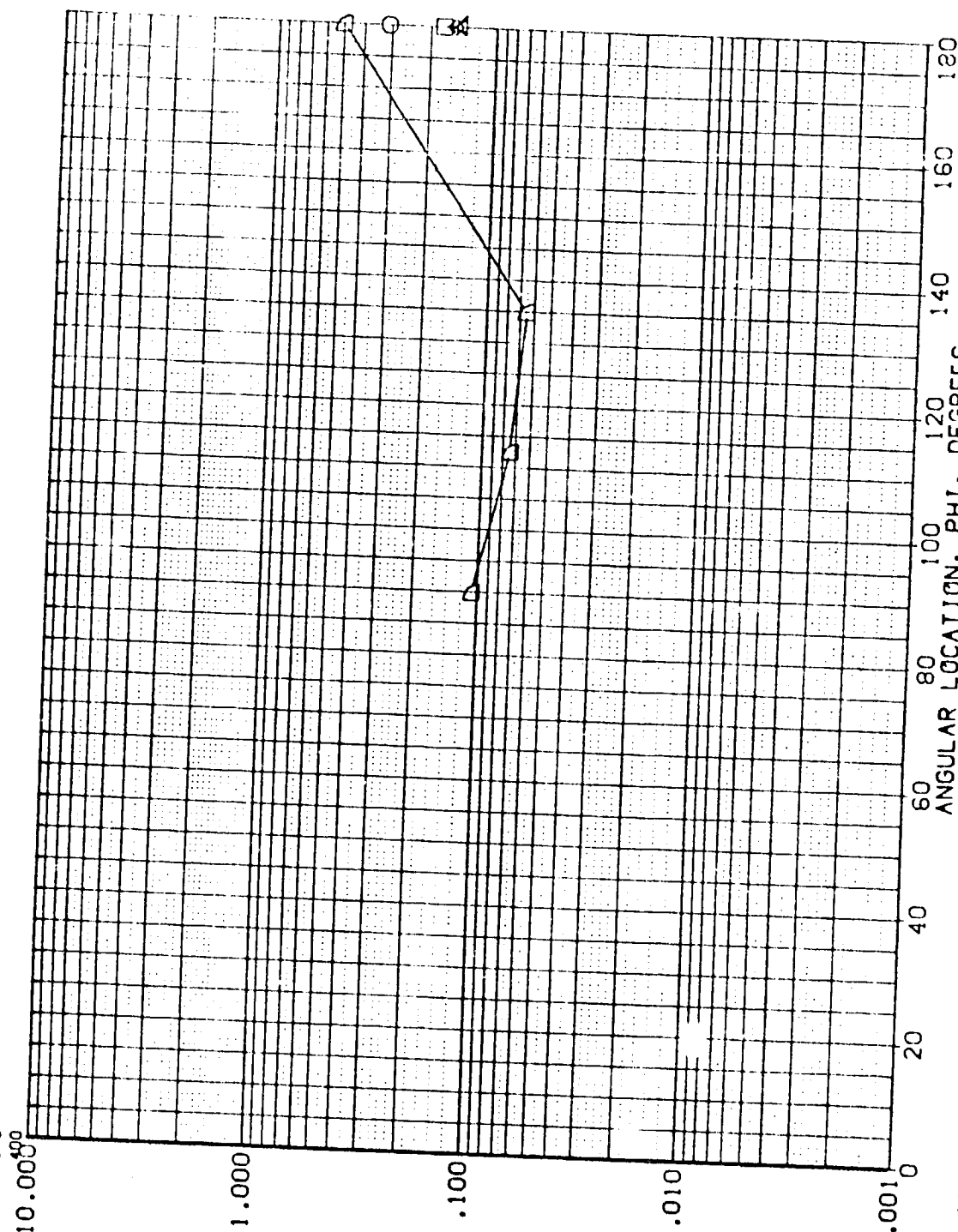


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

IH18 B10C507W87M3F4V5 T9 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L

□ .425
 □ .450
 ◇ .475
 △ .500
 △ .525

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .031
 BETA .000
 DELTAH .175

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

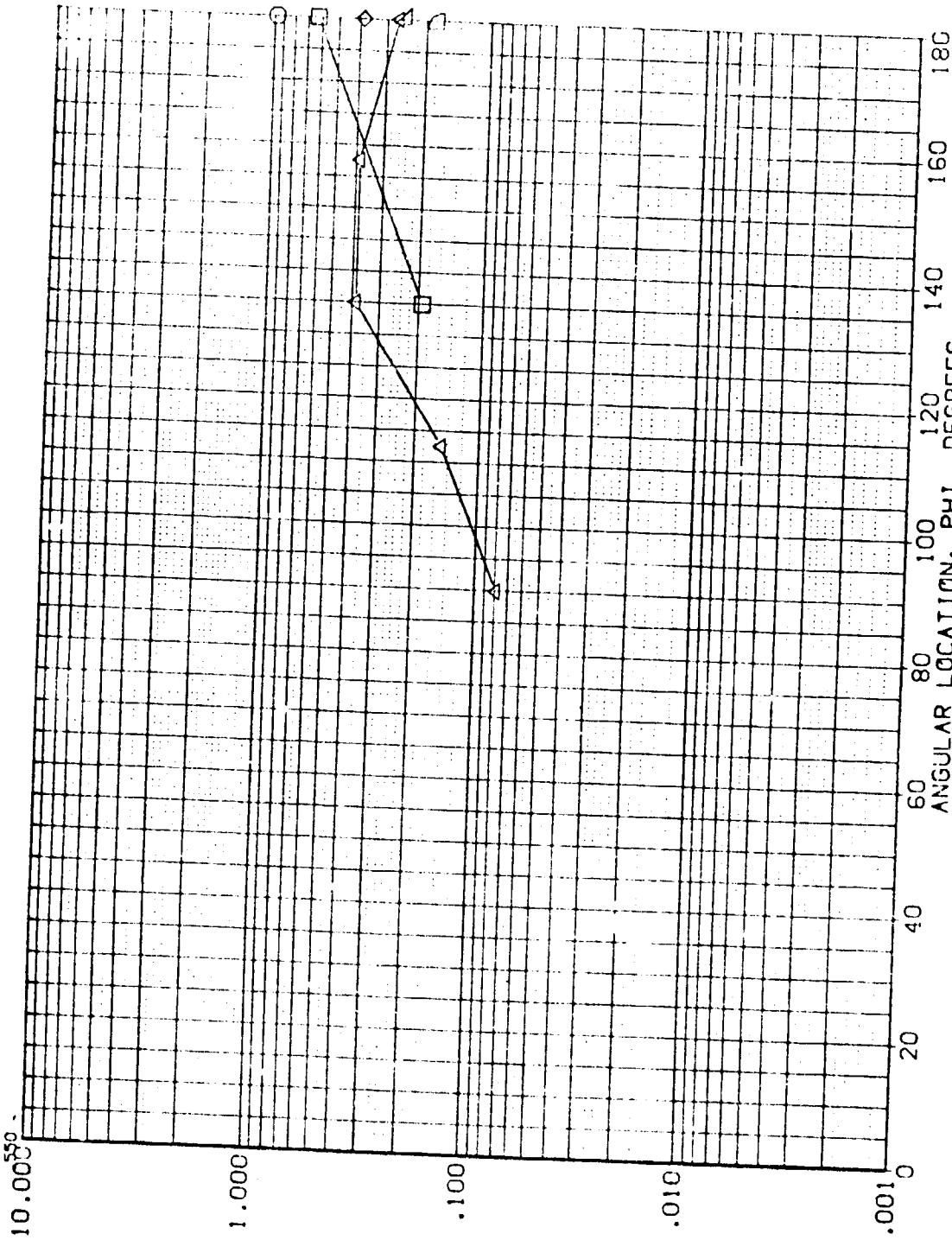


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

PARAMETRIC VALUES
 -5.000 BETA .000
 6.000 DELTAH .175
 .031

ALPHA
 MACH
 X-HT

MAV/HT .900
 RN/L 4.424

SYMBOL X/L
 .600
 .650
 .700
 .800
 .900

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

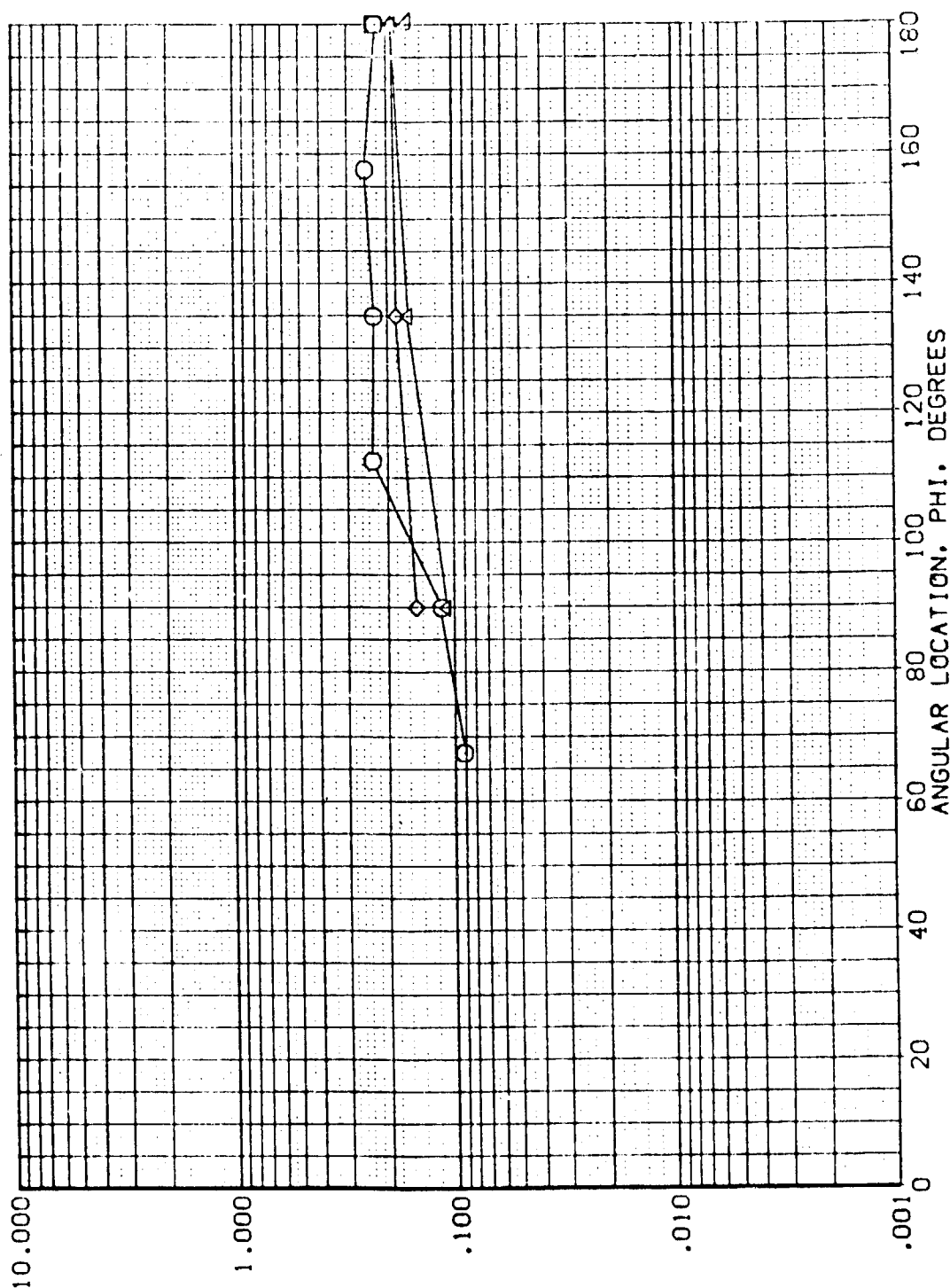


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

!H18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

PARAMETRIC VALUES
 -5.000 BETA
 6.000 DELTA
 .031

ALPHA
 MACH
 X-HT

HAB/HT RN/L
 1.000 4.424

SYMBOL X/L
 .000
 .010
 .020
 .060
 .100
 .150

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

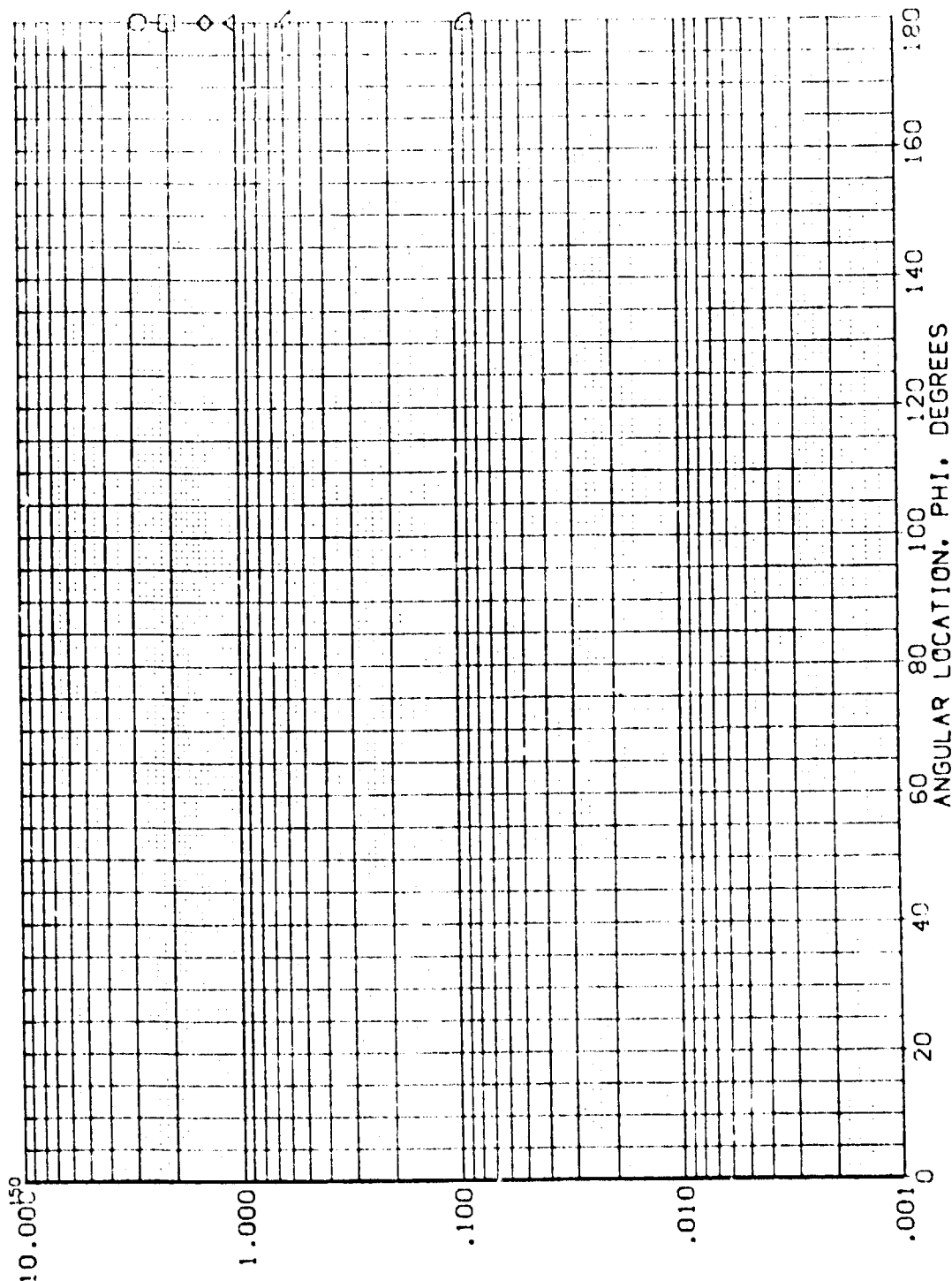


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IHI8 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 6.000
 X-HT .031
 BETA .000
 DELTA .175

SYMBOL X/L HAW/HT RN/L
 0.200 1.000 4.424
 0.250
 0.300
 0.350
 0.375

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

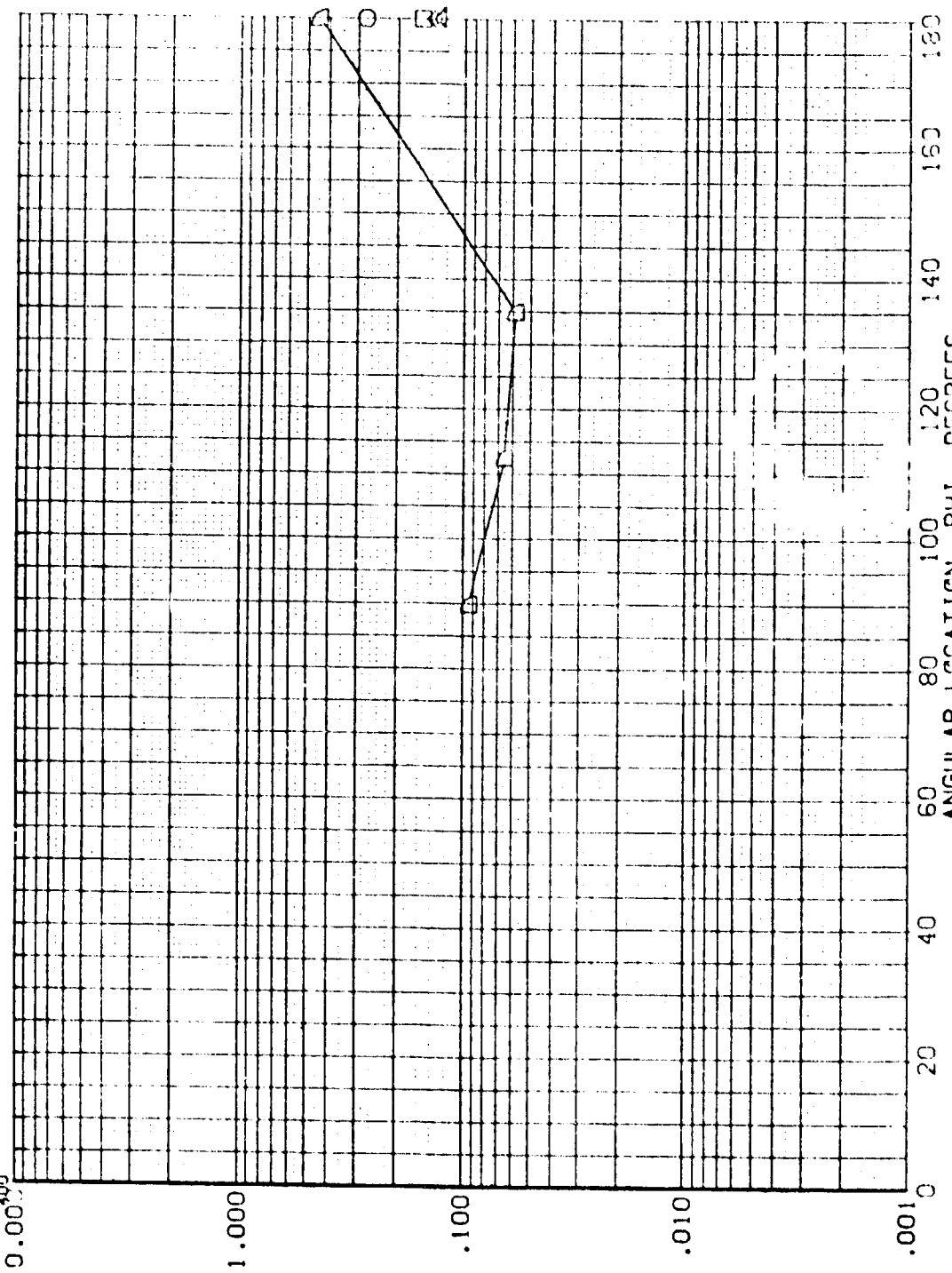


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

SYMBOL X/L HAW/HT RN/L

.425
.450
.475
.500
.525
.550

PARAMETRIC VALUES
ALPHA
MACH
X-HT

-5.000
6.000
.031

BETA
DELTA
H

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

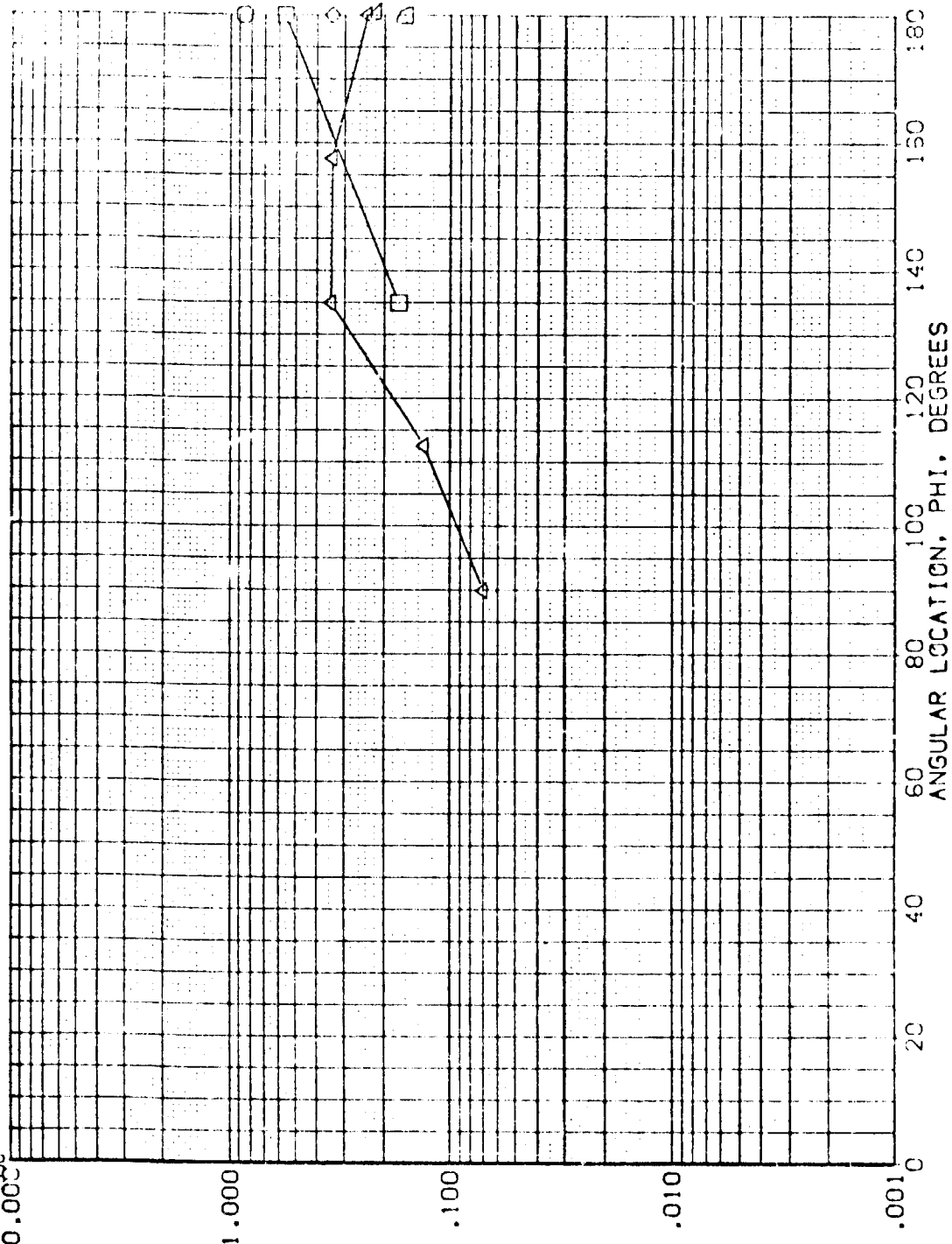
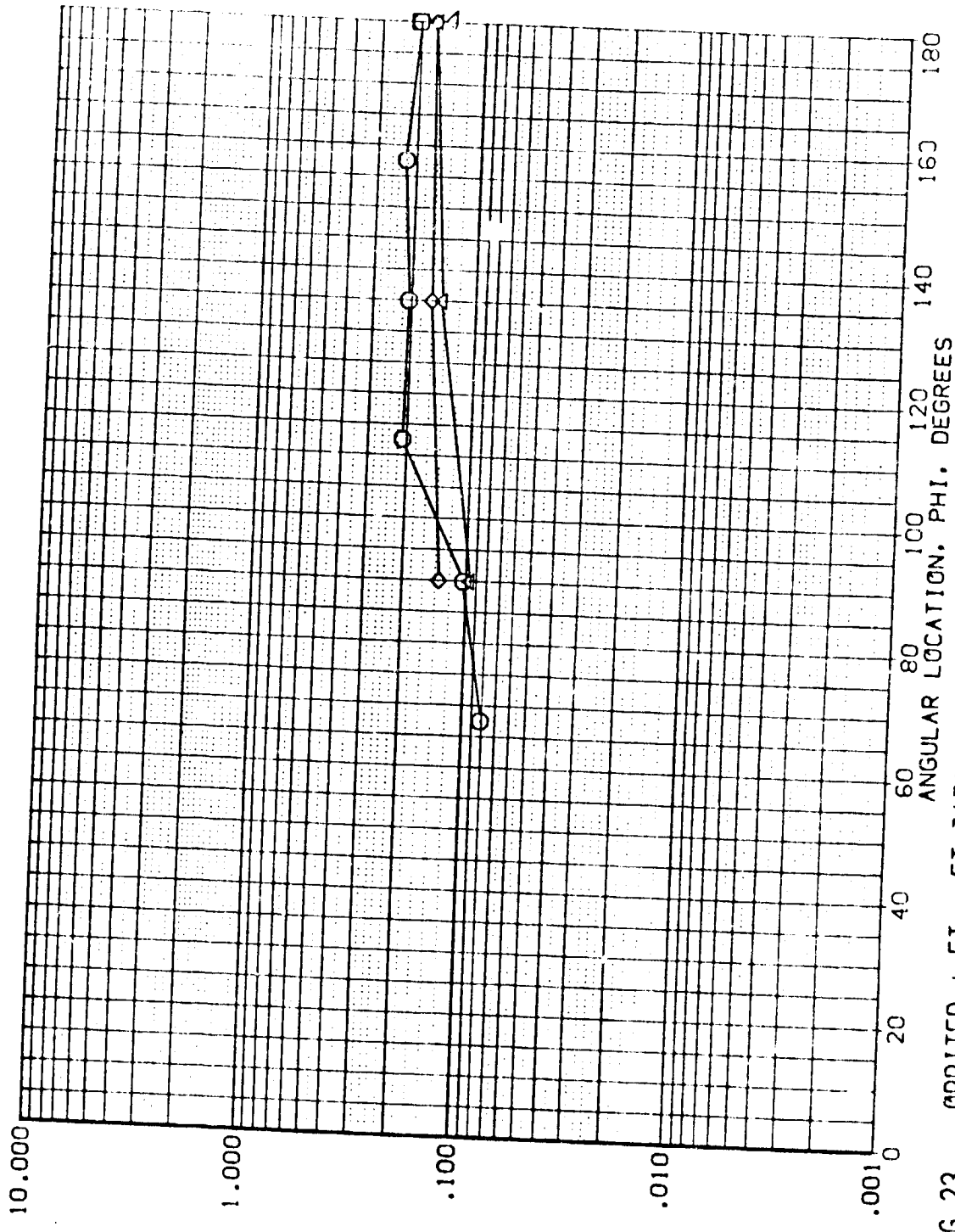


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

IH18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK (RQMT19)

SYMBOL X/L HAW/HT RN/L
 .600
 .650
 .700
 .800
 .900

PARAMETRIC VALUES
 ALPHA -5.000
 MACH 5.000
 X-HT .031
 BETA .000
 DELTAH .175



RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(RPT:2) IM18 810C507#87M3F4V5 T8 X26 EXTERNAL TANK
(RPT:9) IM18 810C507#87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
-5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

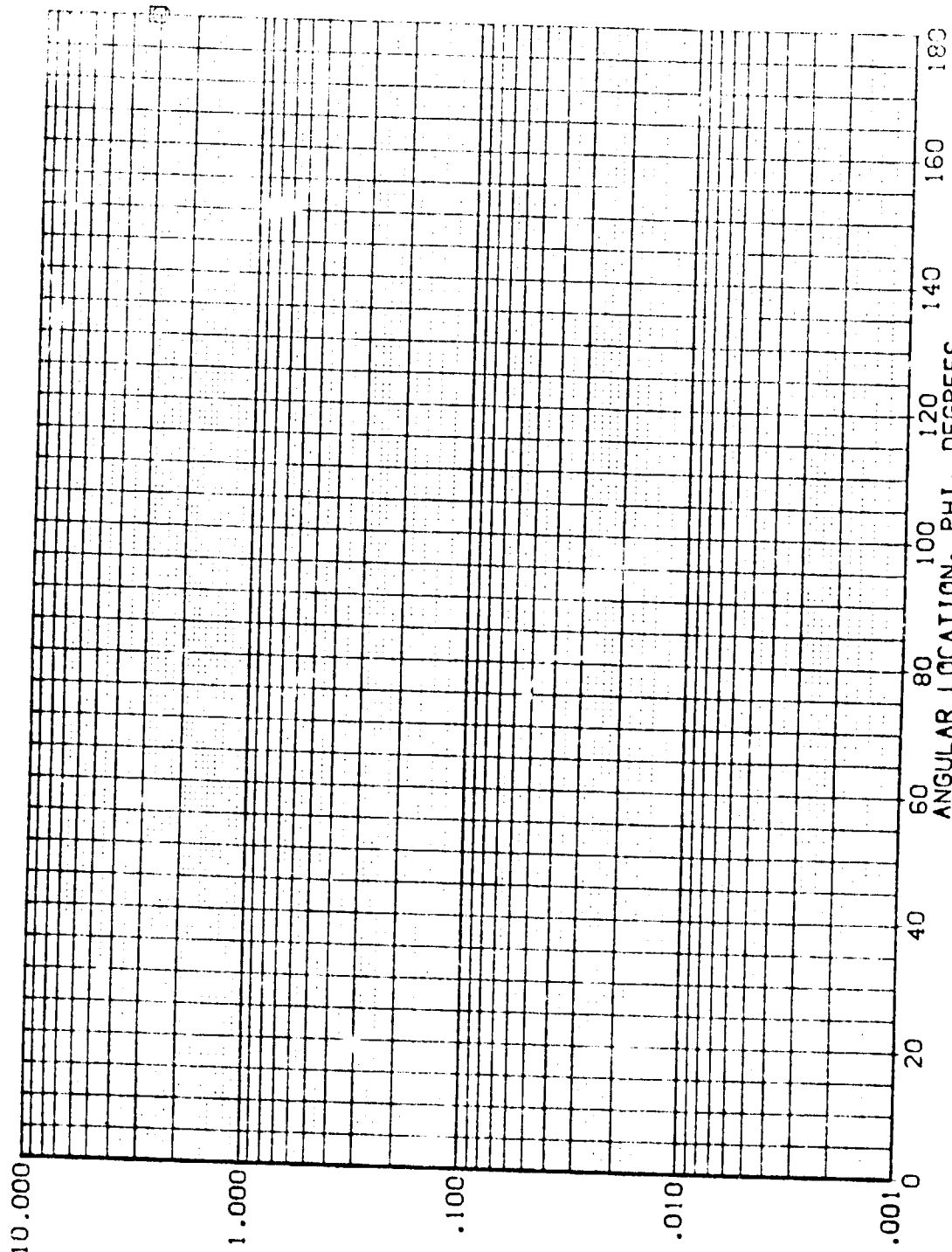


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

$RN/L = 4.643$ $HAW/HT = .850$ $X/L = .000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RQHT12) 81H18 810C507#87#3F4V5 T8 X26 EXTERNAL TANK
(RQHT19) 81H18 810C507#87#3F4V5 T8 X26 EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000
X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

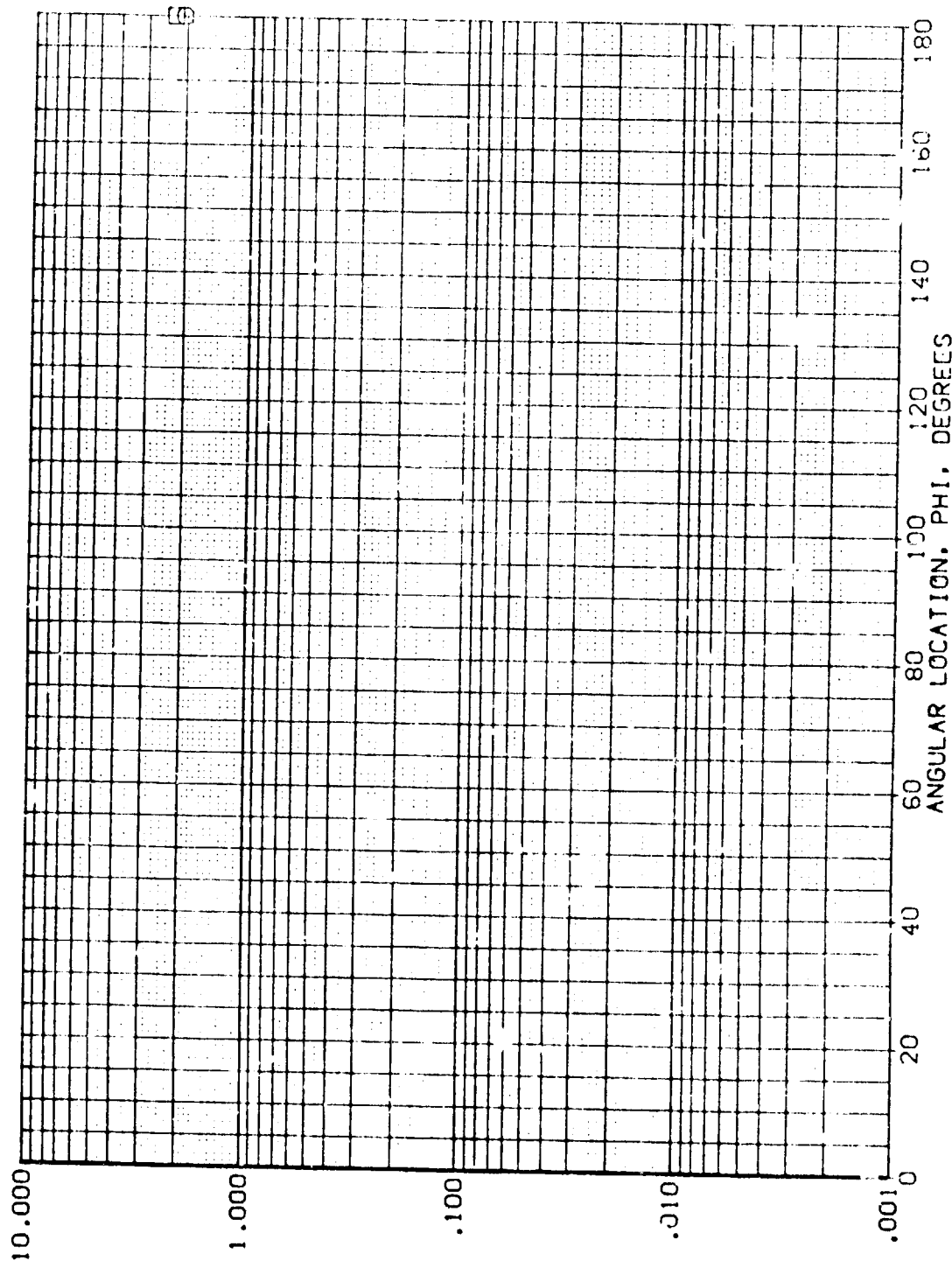


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .010

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0M112) [H18 B10C507W87M3F4V5 18 X26 EXTERNAL TANK
 (R0M119) [H18 B10C507W87M3F4V5 18 X26 EXTERNAL TANK

BETA ALPHA MACH X-H1
 .000 .000 8.000 .071
 .000 -5.000 6.000 .031

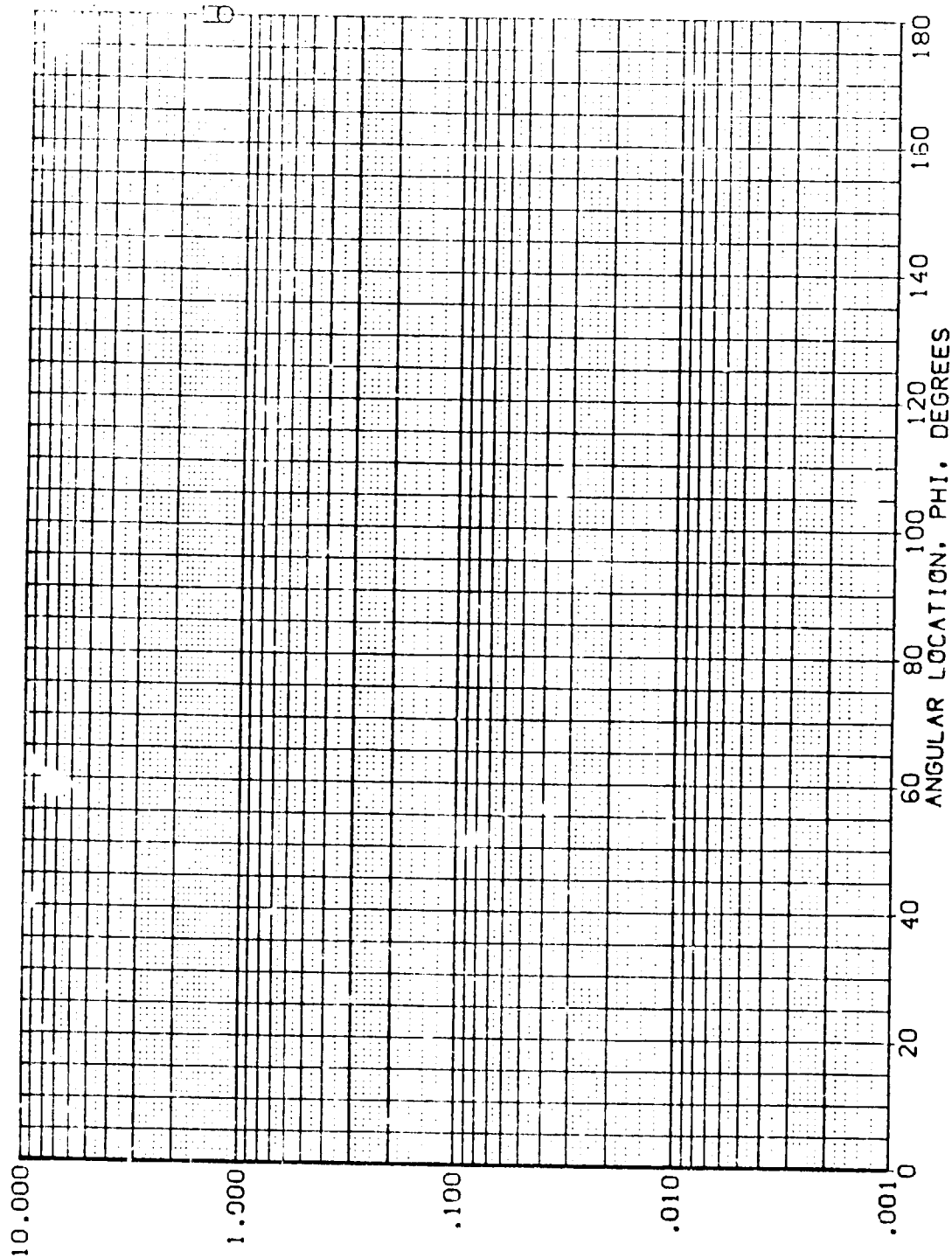


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .020

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0HT12) 1418 B10C5D7V87M3F4V5 18 X26 EXTERNAL TANK
 (R0HT19) 1418 B10C5D7V87M3F4V5 18 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

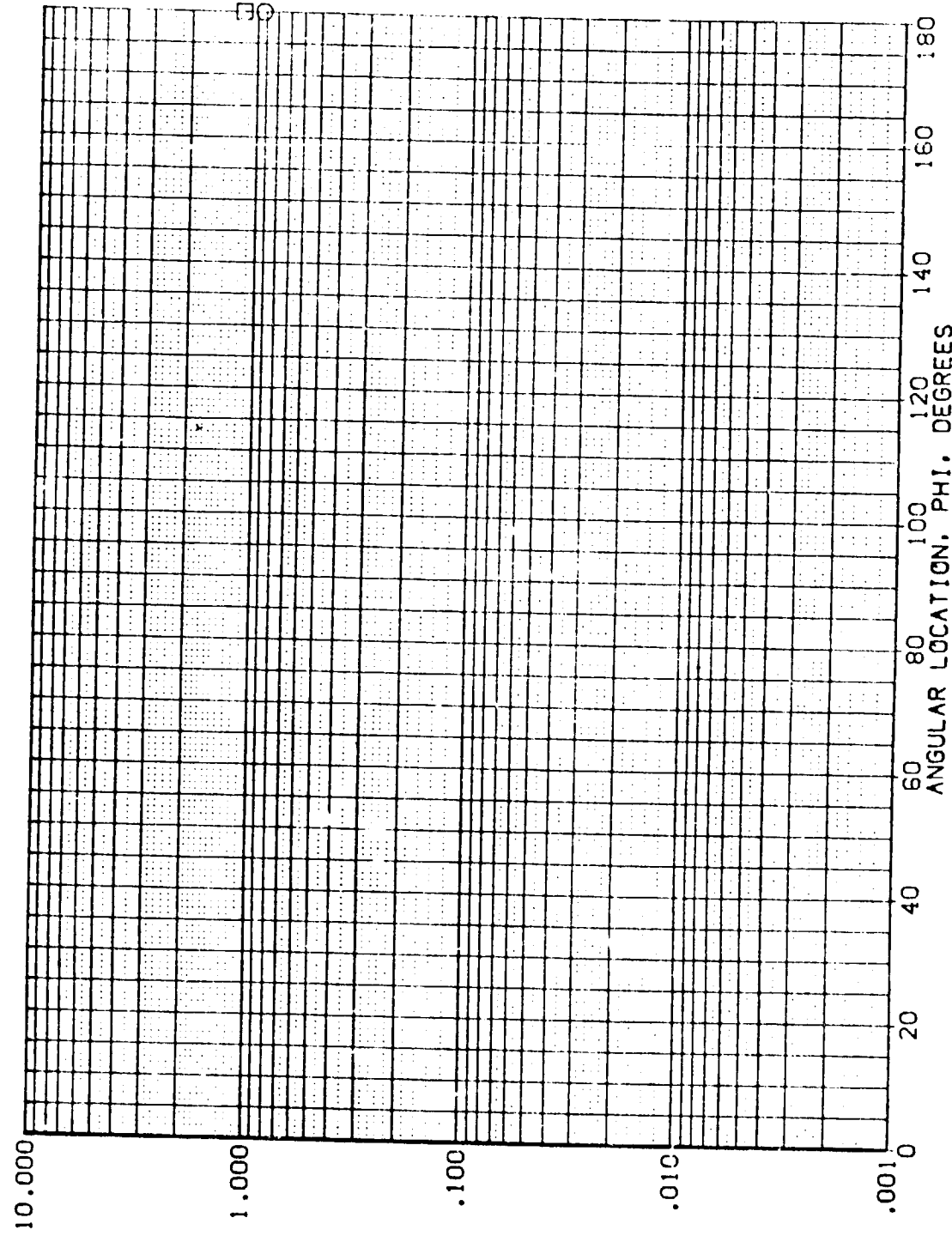


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .060

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL
(R0-T12)
(R0-T19)

CONFIGURATION DESCRIPTION
IH18 B10C507*87*3F4V5 T8 X26 EXTERNAL TANK
IH18 B10C507*87*3F4V5 T8 X26 EXTERNAL TANK

BETA .000
ALPHA .000
MACH 5.000
X-HT .031

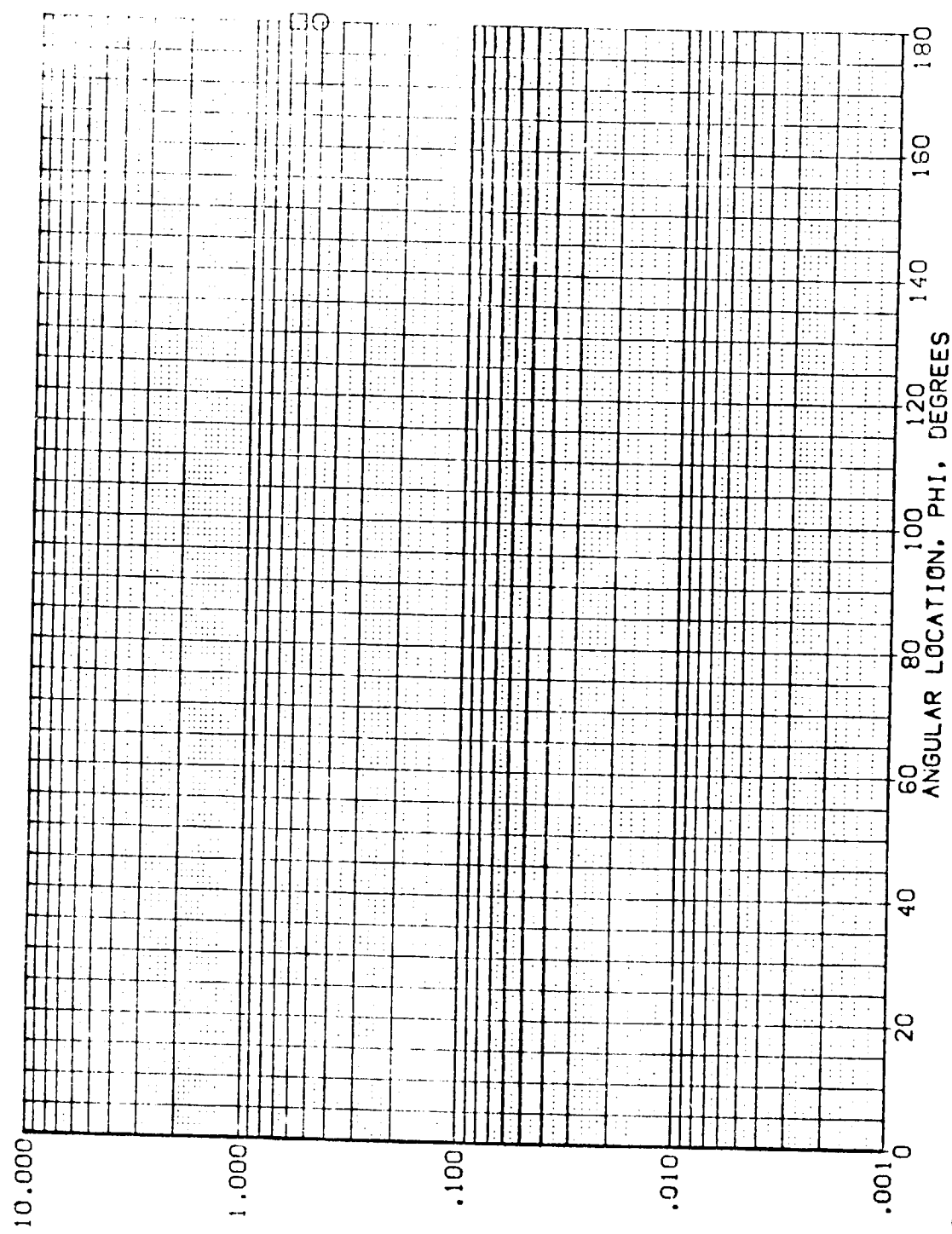


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .100

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RMT12)
(RMT19)

IM18
IM18

B10C507M87M3F4V5 T8 X26 EXTERNAL TANK
B10C507M87M3F4V5 T8 X26 EXTERNAL TANK

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

X-HT
.031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

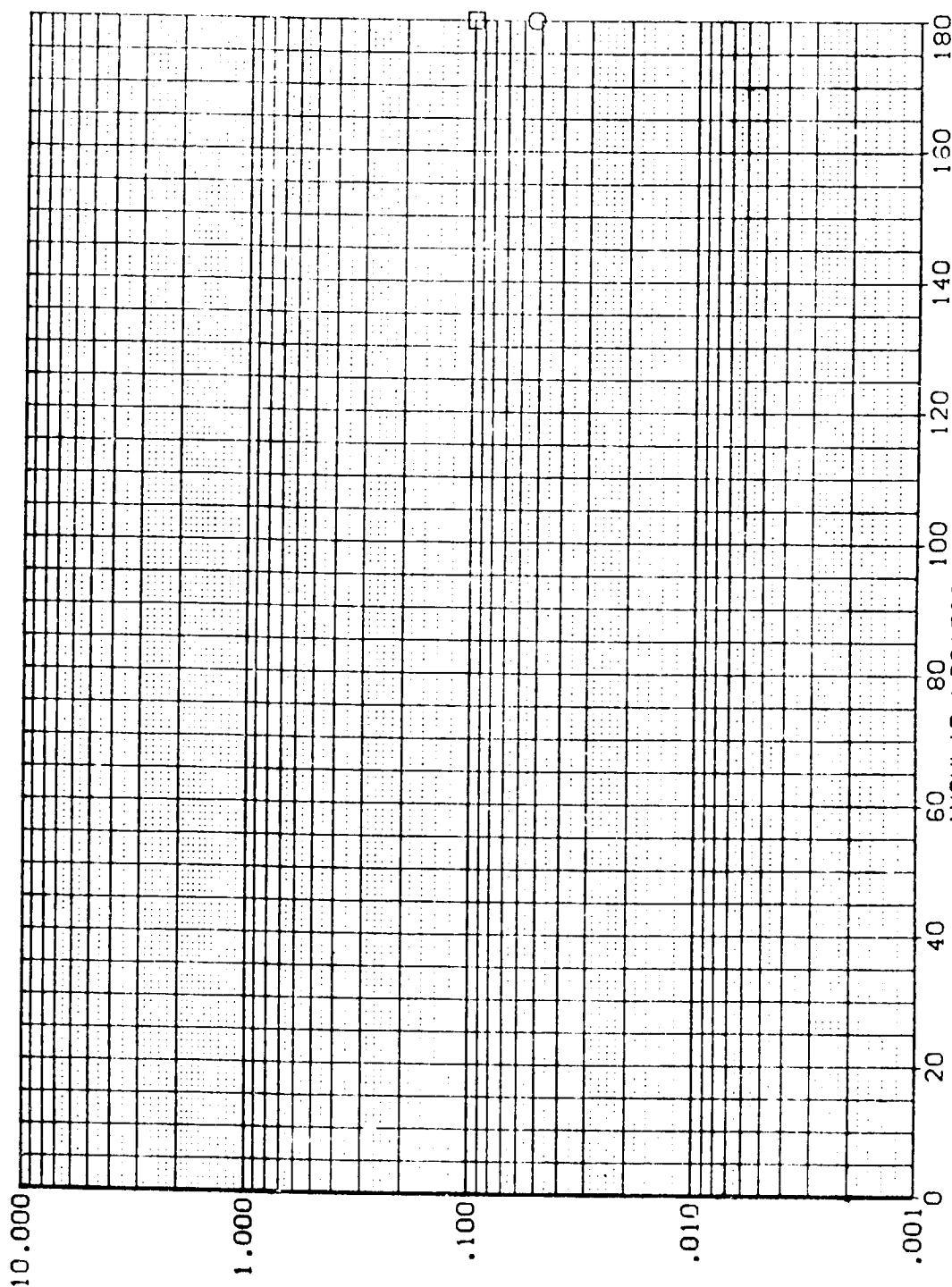


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .150

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL: 8
 (PMT12)
 (PMT19)

CONFIGURATION DESCRIPTION
 IM18 B10C502*97*3F4V5 T8 X26 EXTERNAL TANK
 IM18 B10C502*97*3F4V5 T8 X26 EXTERNAL TANK

BETA .000
 .000

ALPHA .000
 -5.000

MACH 6.000
 6.000

X-HT .31
 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

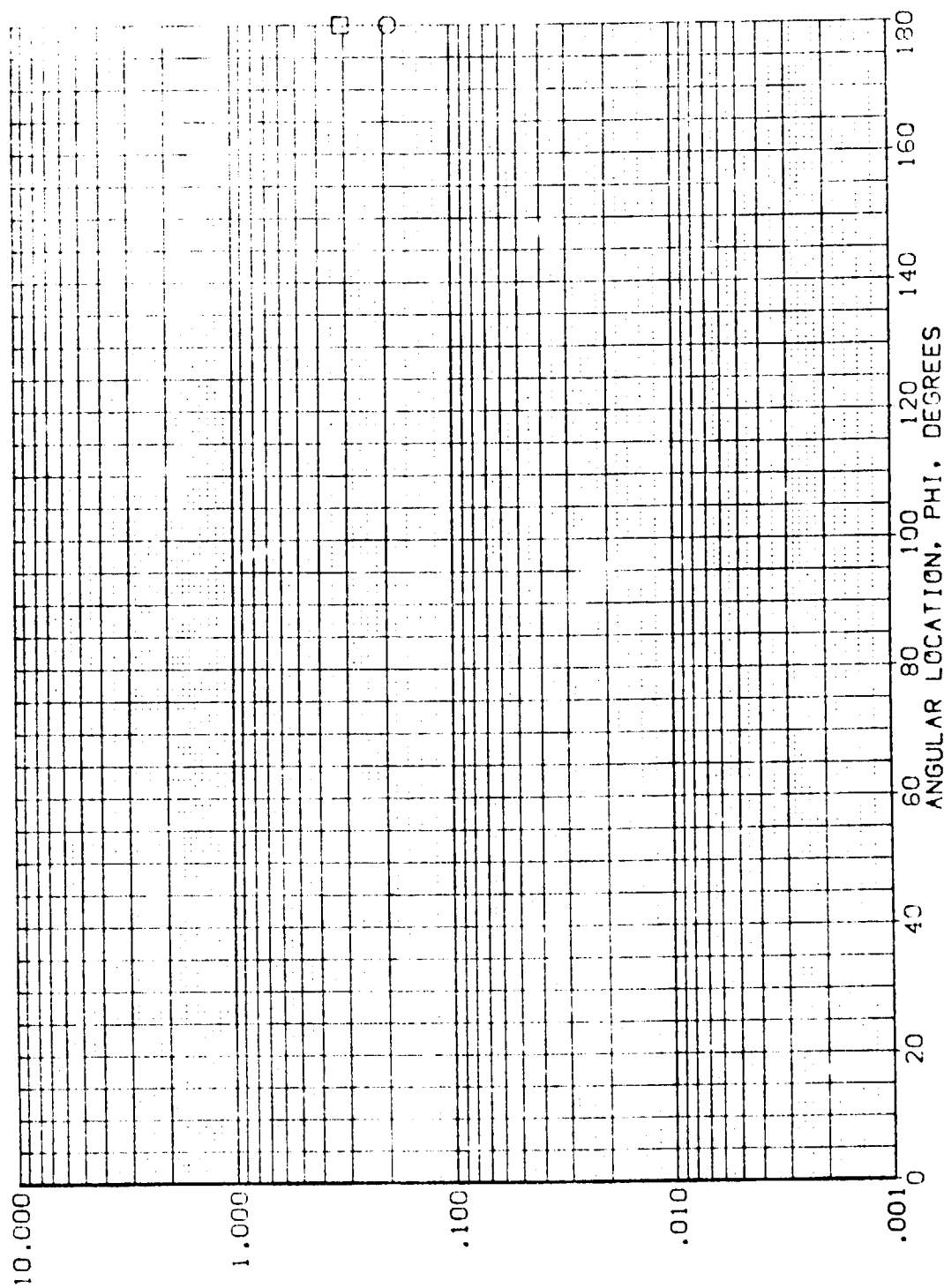


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .200

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0HT12) IM18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0HT19) IM18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

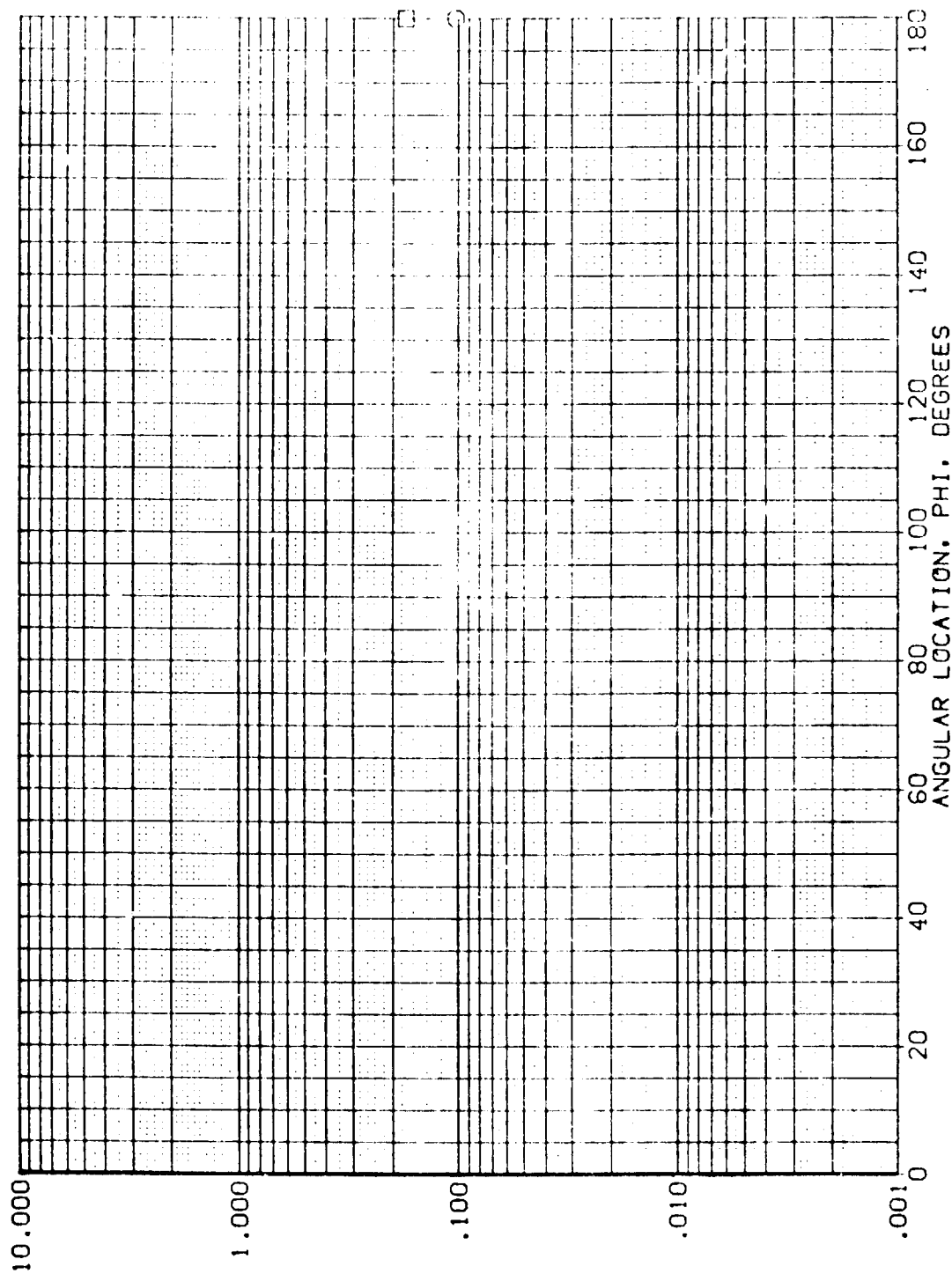


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .250

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT12) 8 B10C5D7M87M3F4V5 T8 X26 EXTERNAL TANK
 (RMT19) B10C5D7M87M3F4V5 T8 X23 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

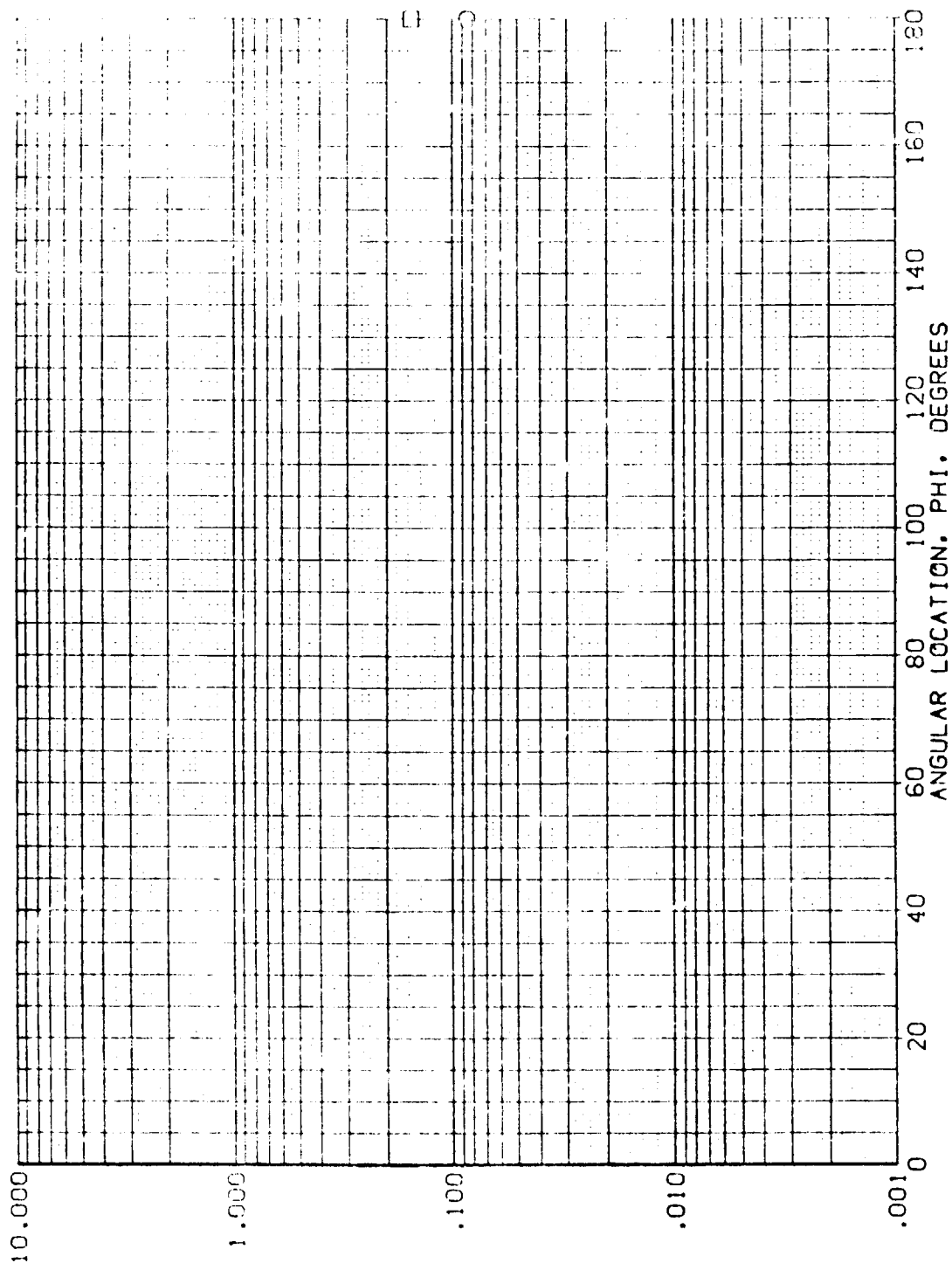


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .300 PAGE 424

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0HT12) IM18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0HT19) IM18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

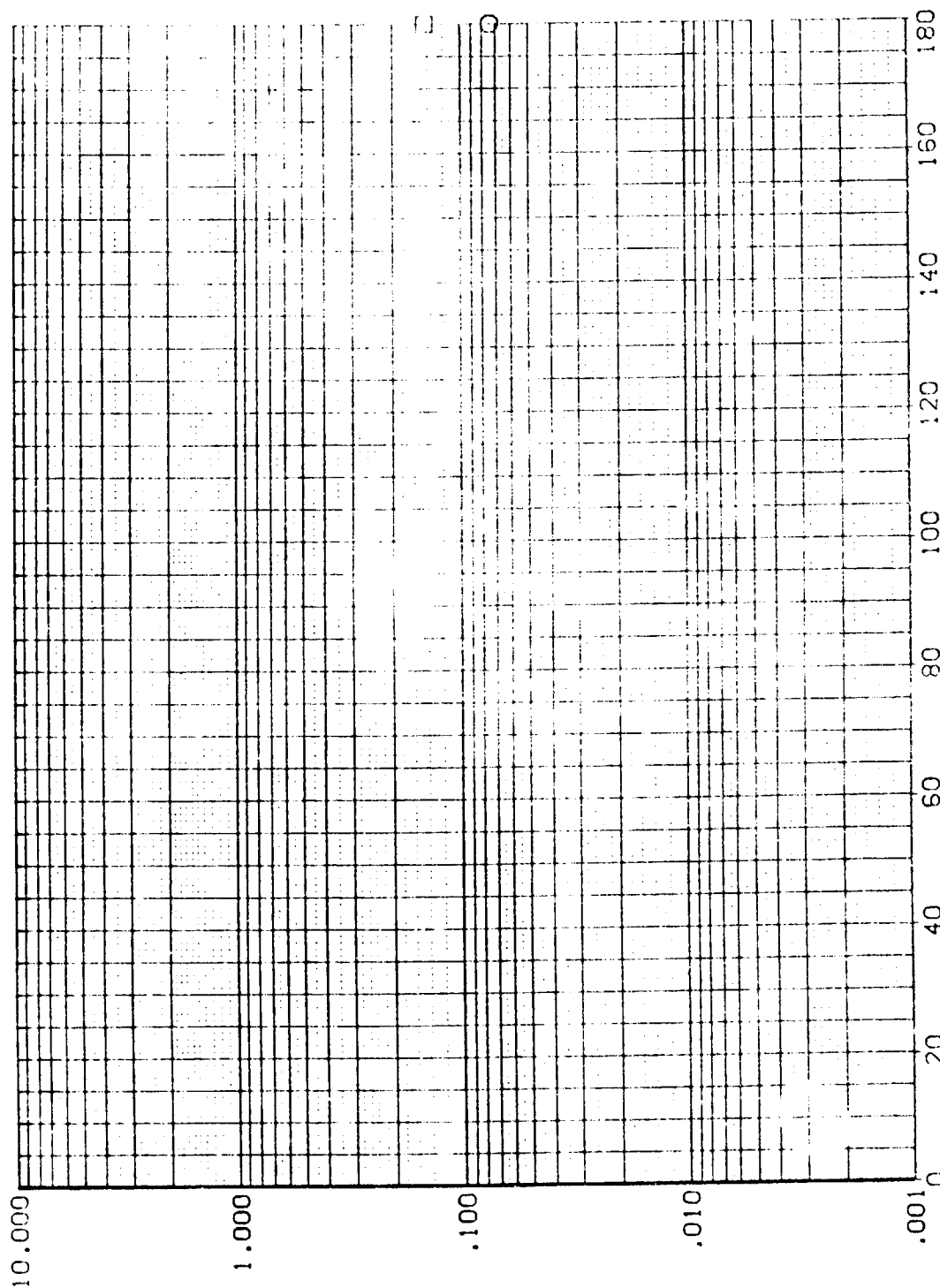


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .350

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CONT 12) 2 [H18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK
 (CONT 19) [H18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

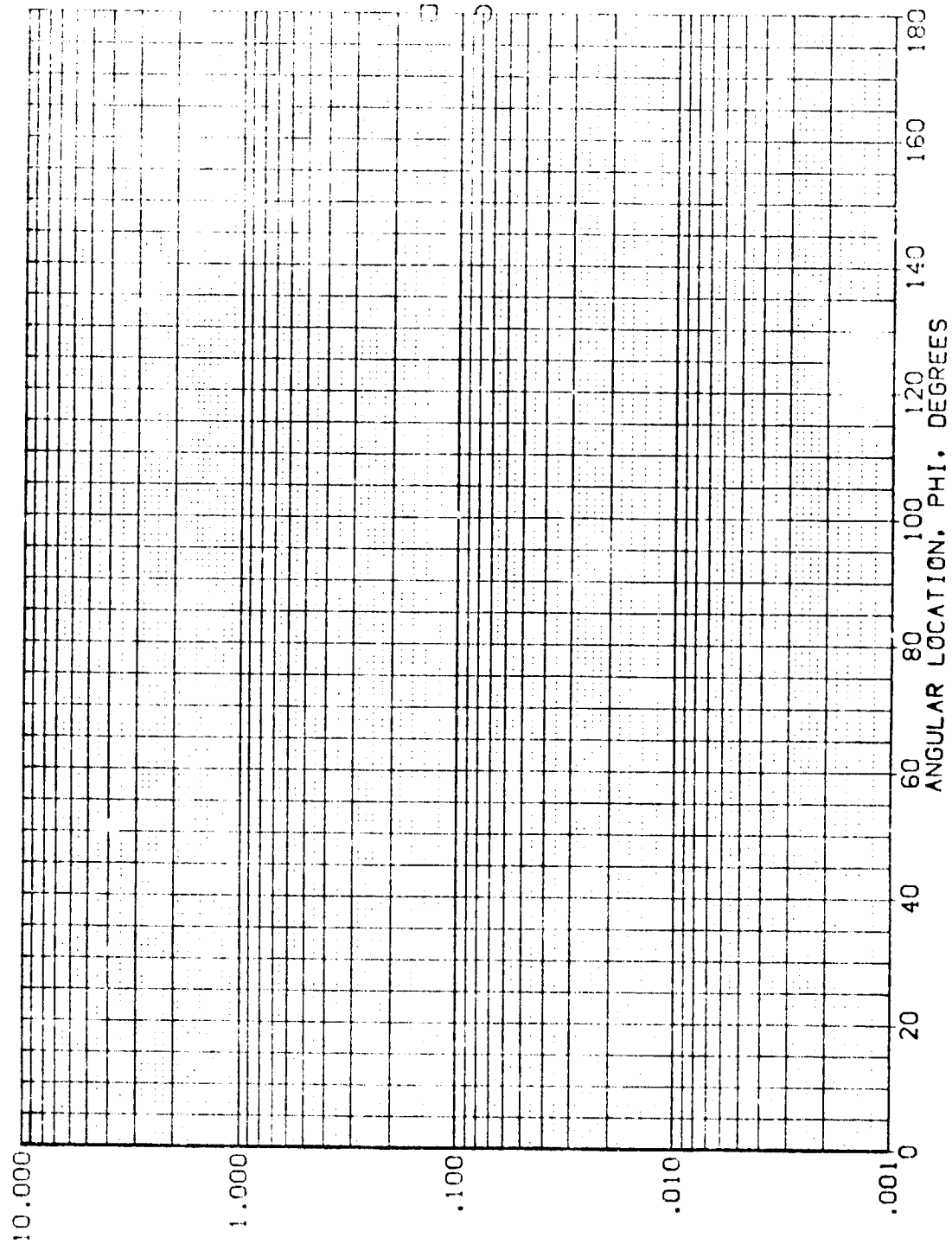


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .375

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(RMT12) IM18 B10C507N87H3F4V5 T8 Y26 EXTERNAL TANK .000 .000 6.000 .031

(RMT19) IM18 B10C507N87H3F4V5 T8 X26 EXTERNAL TANK .000 -5.000 6.000 .031

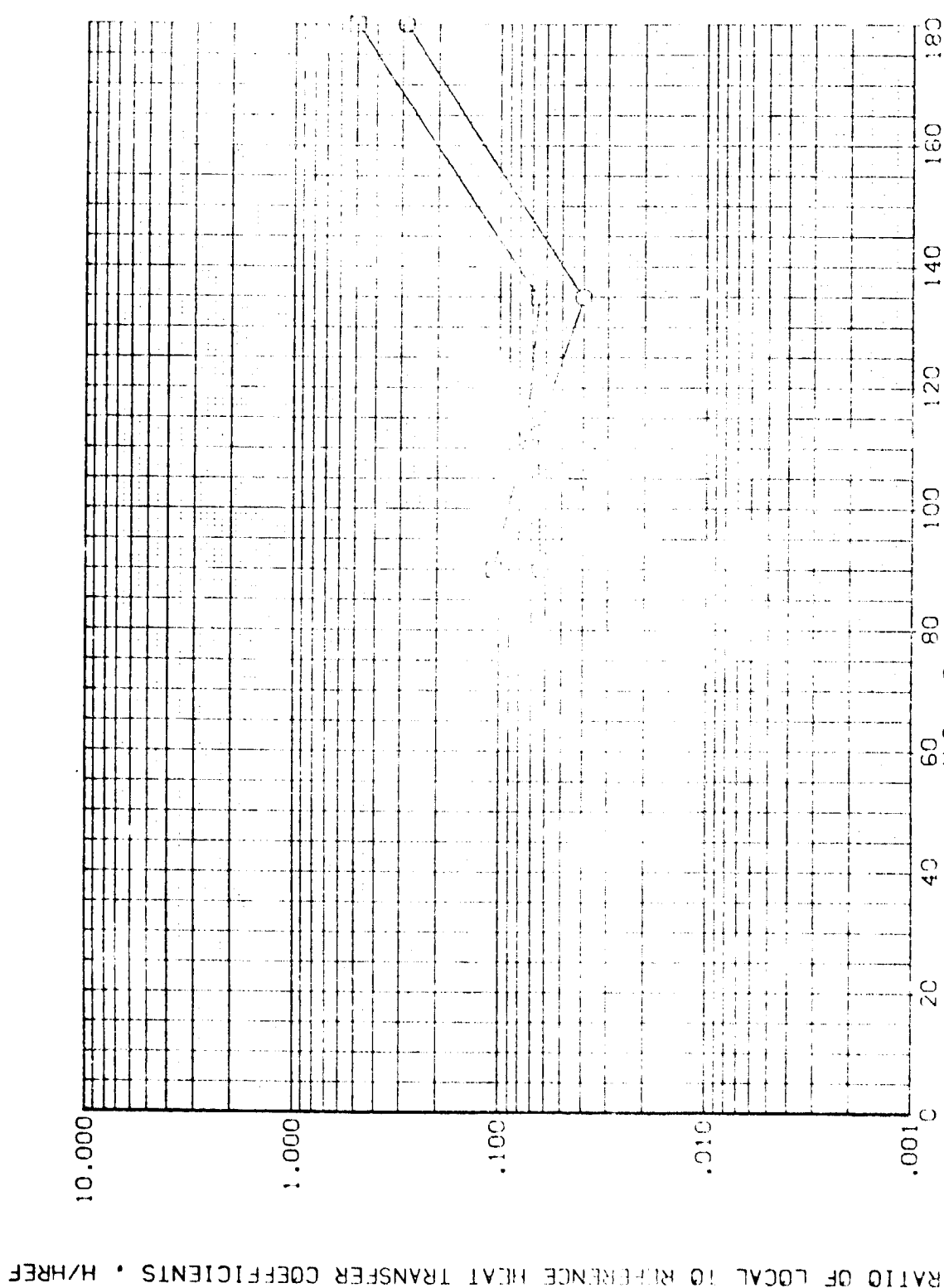


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .400

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(RMT12) B10C507M87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(RMT19) B10C507M87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

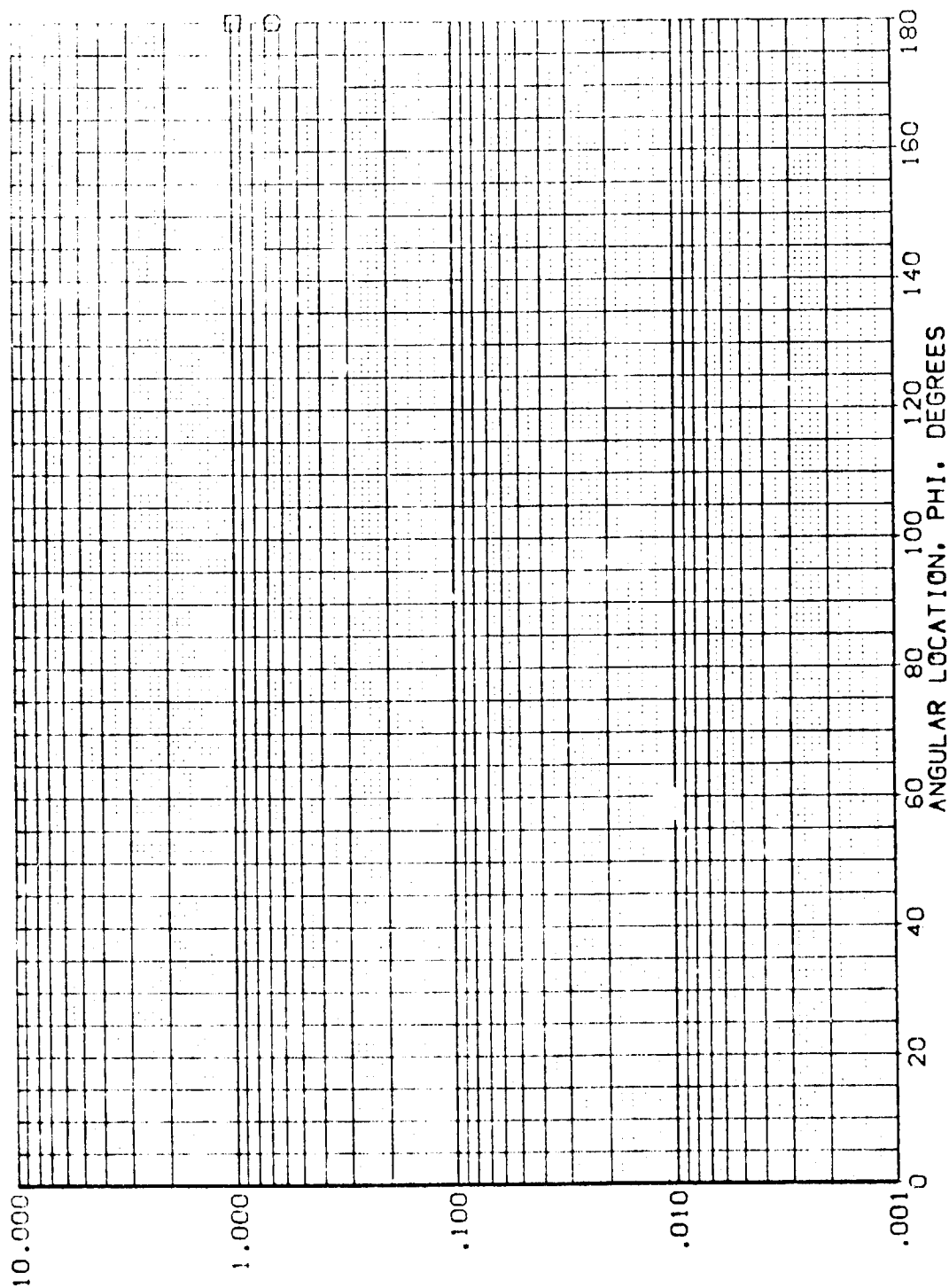


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .425

DATA SET SYMBOL: CONFIGURATION DESCRIPTION
 (R0MT12) B I118 B100507#87M3F4V5 T8 X26 EXTERNAL TANK
 (R0MT19) I118 B100507#87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

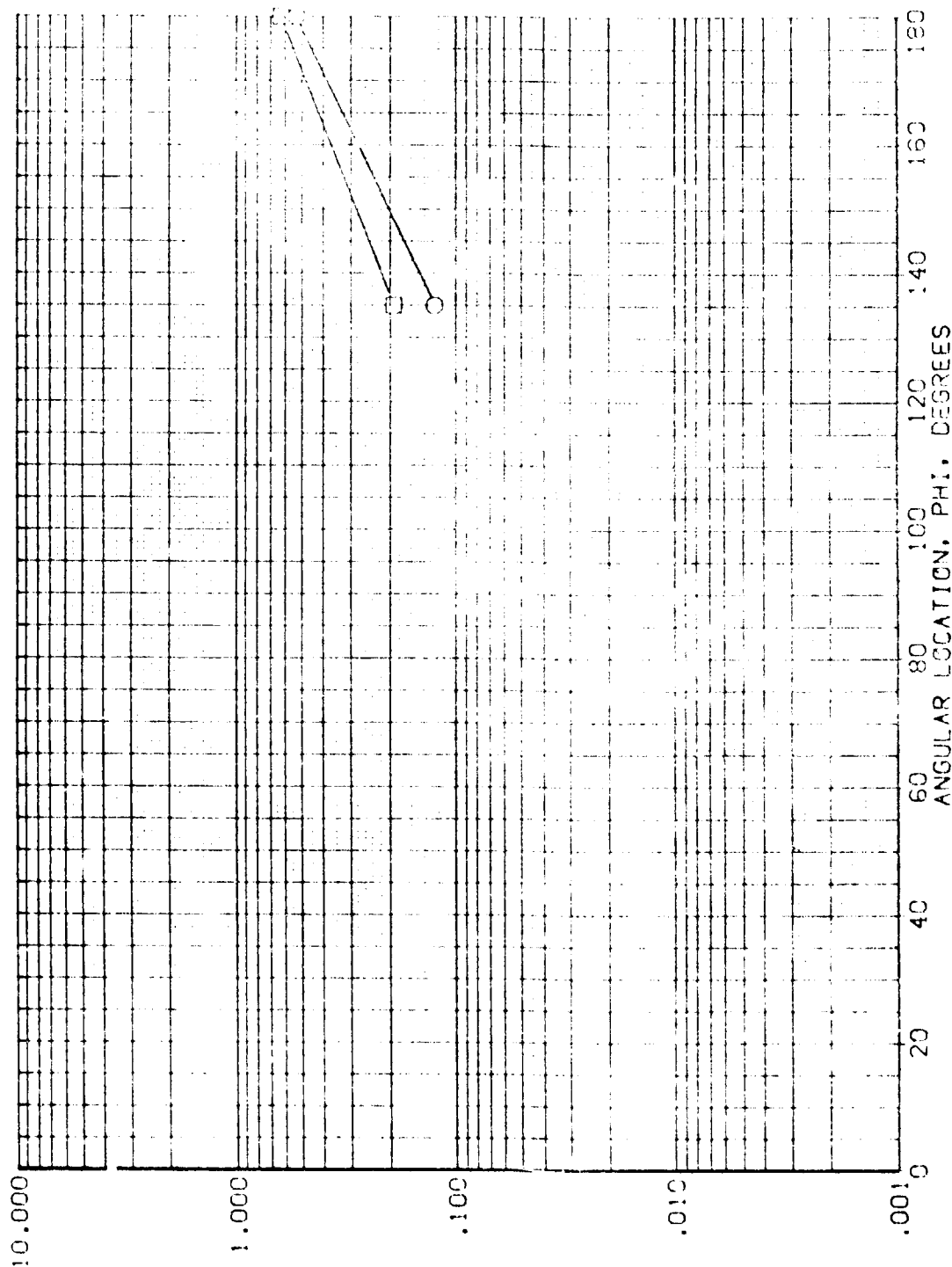


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .450

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT12) 1H18 B105502W87M3F4V5 T8 X26 EXTERNAL TANK
 (RMT19) 1H18 B105502W87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-REF
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

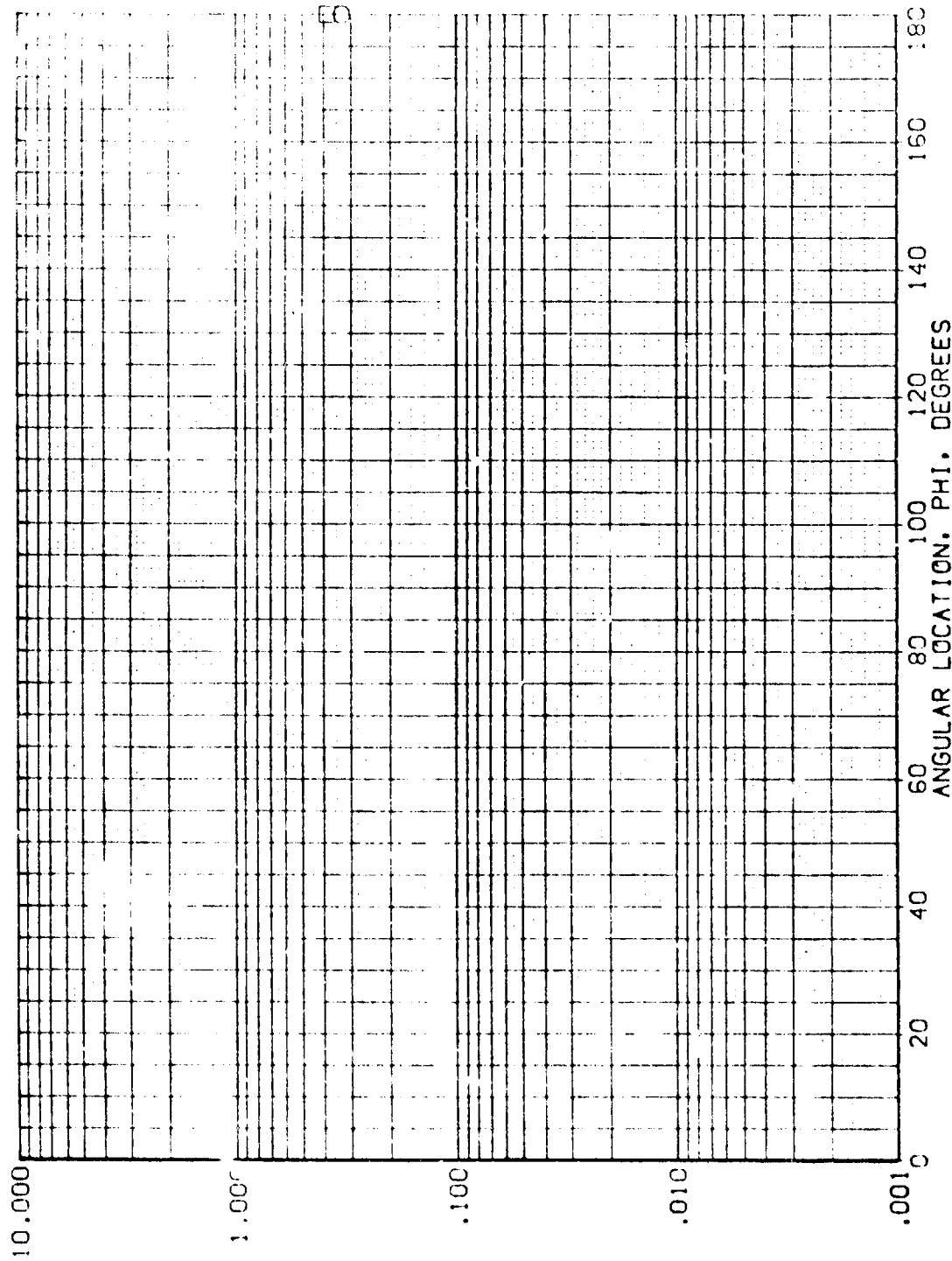


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .475 PAGE 430

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(RMT12)	IM18 310C507W87M3F4V5 T8 X26 EXTERNAL TANK	.000	.000	6.700	.031
(RMT19)	IM18 810C507W87M3F4V5 T8 X26 EXTERNAL TANK	.000	-.000	5.100	.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

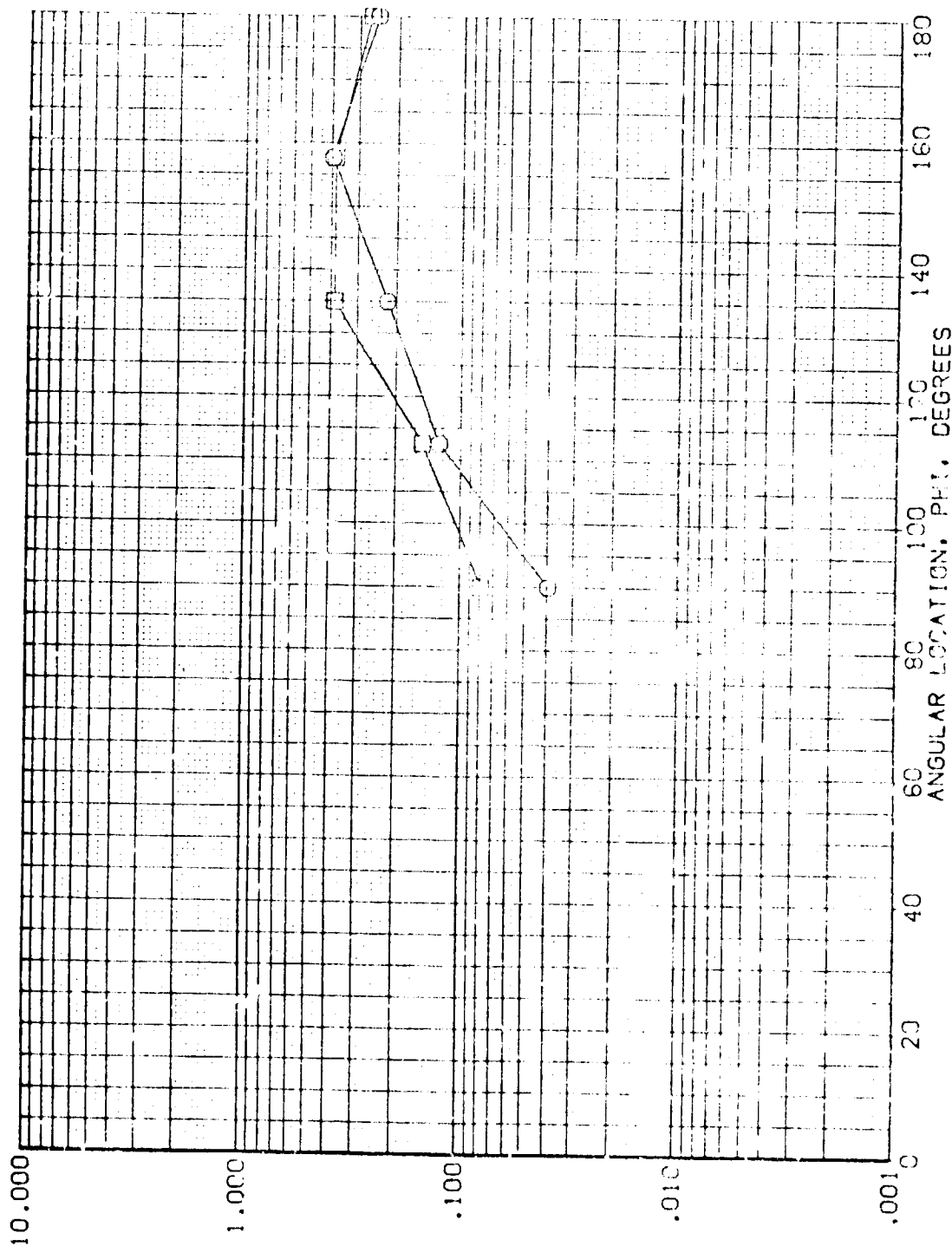


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .500

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS
NOT GUARANTEED

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-REF
 (RMT12) 1H18 BLOC507487M3F4V5 18 X26 EXTERNAL TANK .000 .000 6.000 .031
 (RMT19) 1H18 BLOC507487M3F4V5 18 X26 EXTERNAL TANK .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

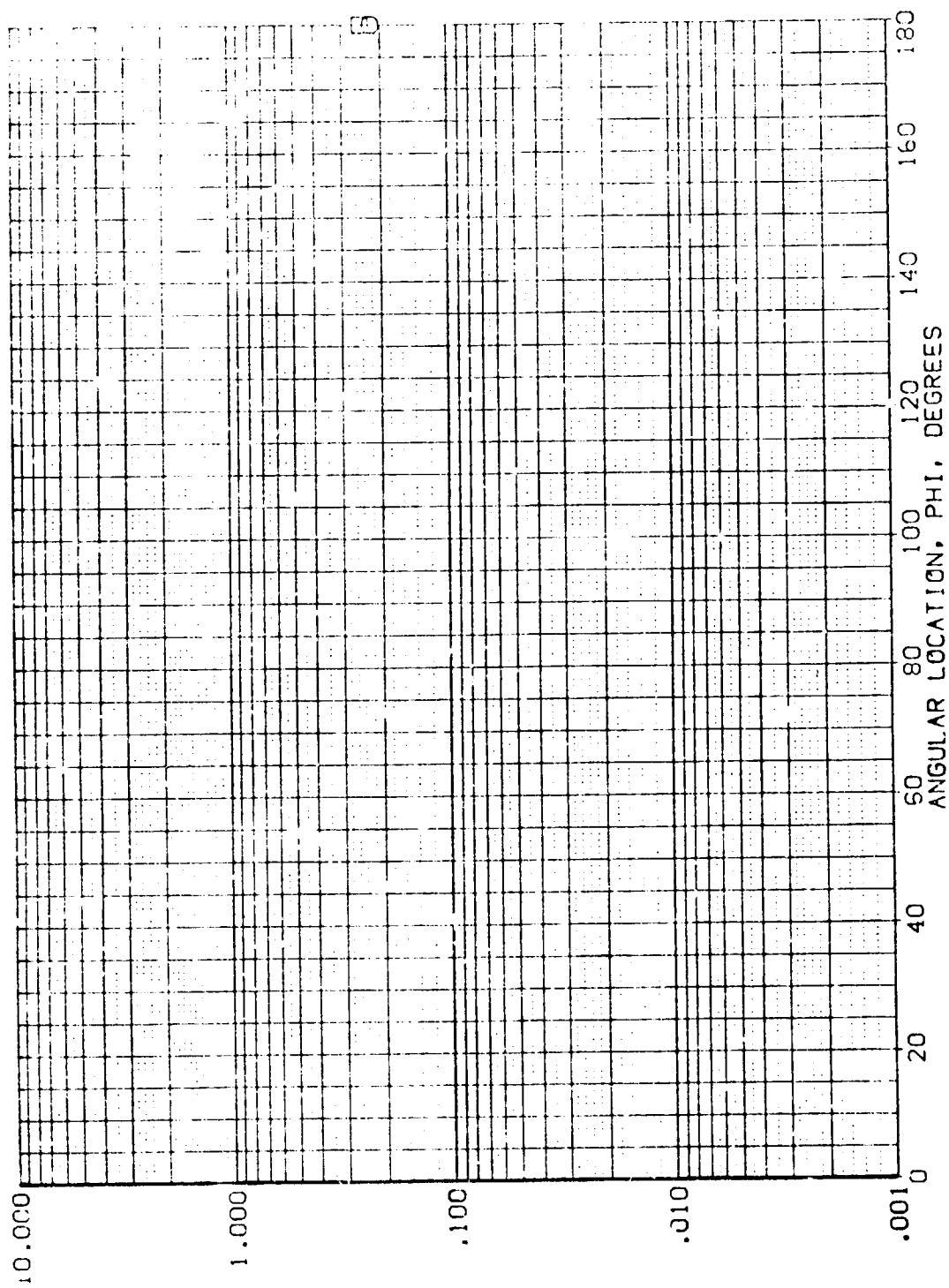


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .525

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(R0MT112)	IH18 B10C507M87M3F4V5 TB X26 EXTERNAL TANK	.000	.000	6.000	.031
(R0MT119)	IH18 B10C507M87M3F4V5 TB X26 EXTERNAL TANK	.000	-5.000	6.000	.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

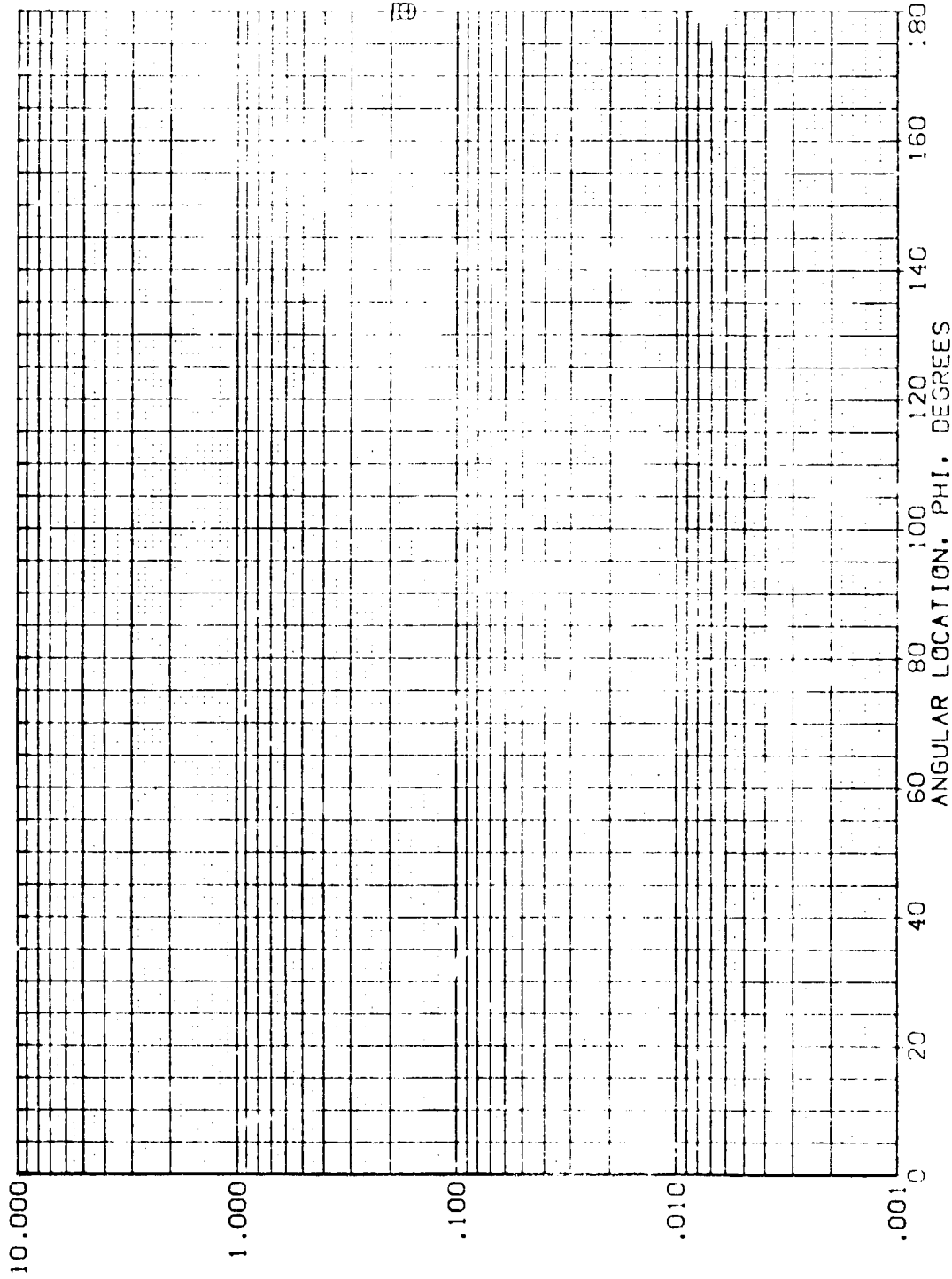


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .550 PAGE 433

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQMT12) 1H18 B10C507W87H3F4V5 18 X26 EXTERNAL TANK
 (RQMT19) 1H18 B10C507W87H3F4V5 18 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

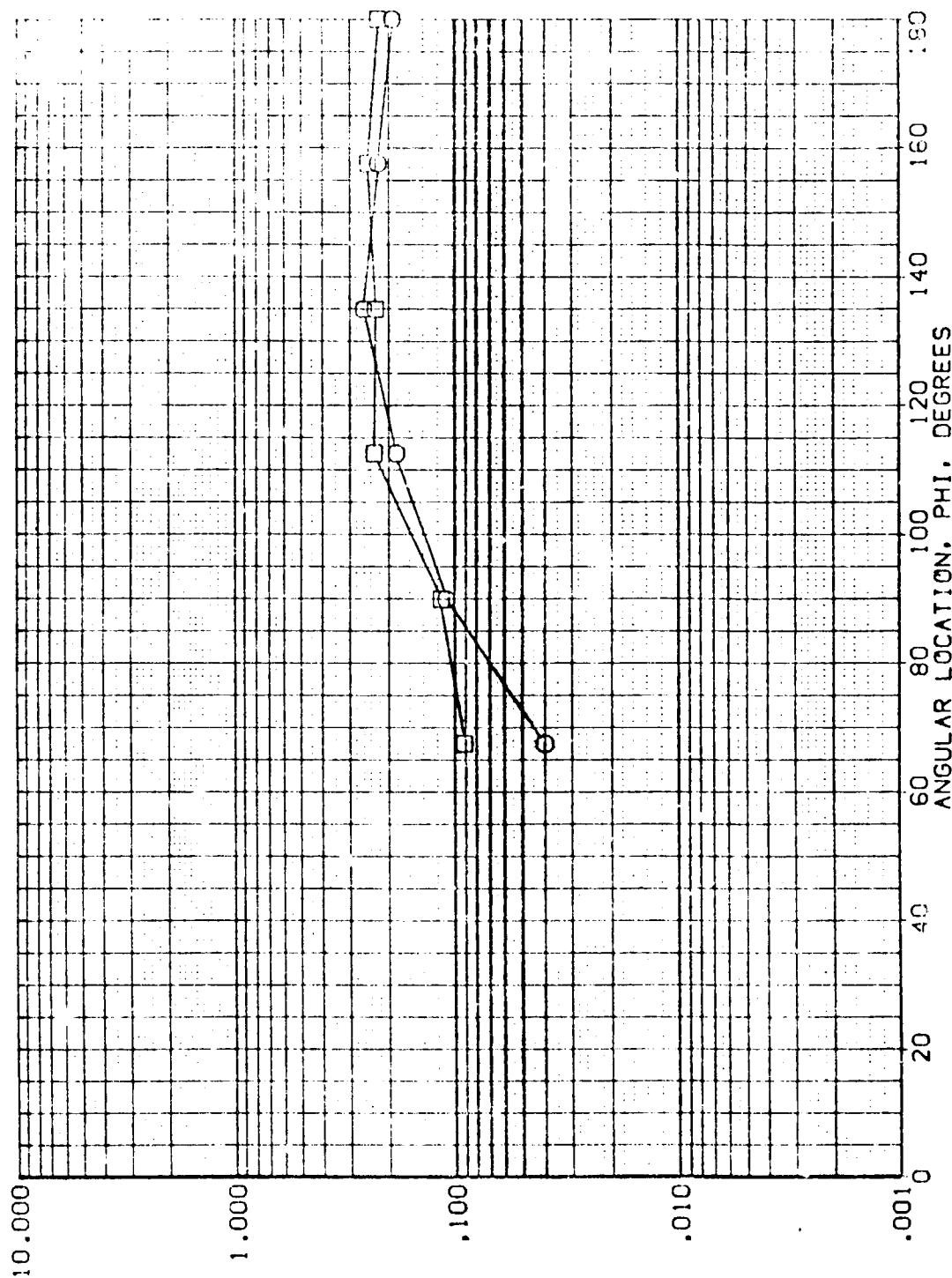


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .600 PAGE 434

DATA SET SYMBOL
(RMT12)
(RMT19)

CONFIGURATION DESCRIPTION
[H18 B10C5D7487M3F4V5 T8 X26 EXTERNAL TANK
[H18 B10C5D7487M3F4V5 T8 X26 EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

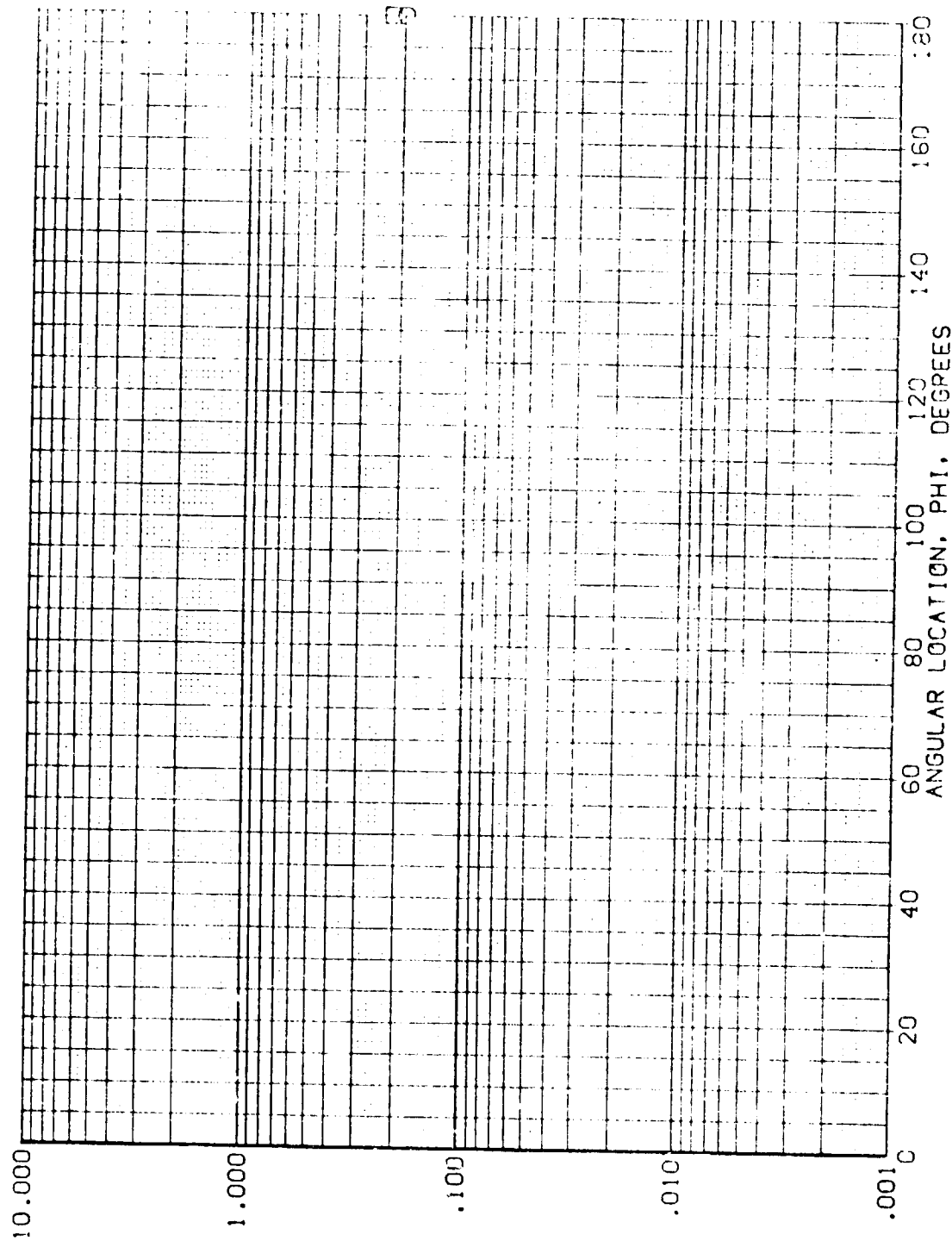


FIG 23 ORBITER + ET - FT DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .650

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RMT12) IM18 810C507W87M3F4V5 T8 X26 EXTERNAL TANK
 (RMT19) IM18 810C507W87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

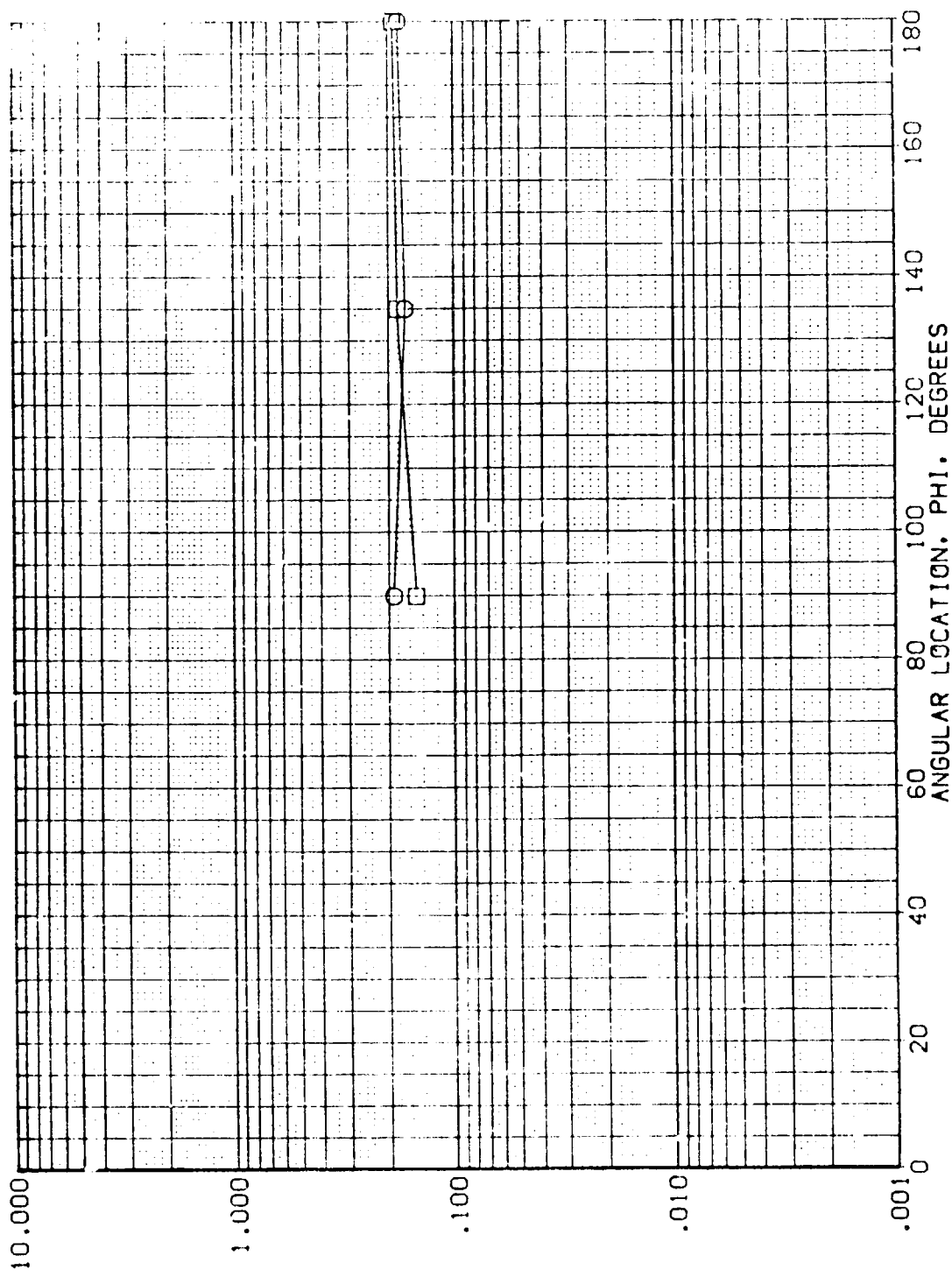


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH Φ - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .700

DATA SET SYMBOL CC#F (GURATION DESCRIPTION

(RCHT12) ☐ IM18 B10C507W87H3F4V5 T8 X26 EXTERNAL TANK

(RCHT19) ☐ IM18 B10C507W87H3F4V5 T8 X26 EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000
X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

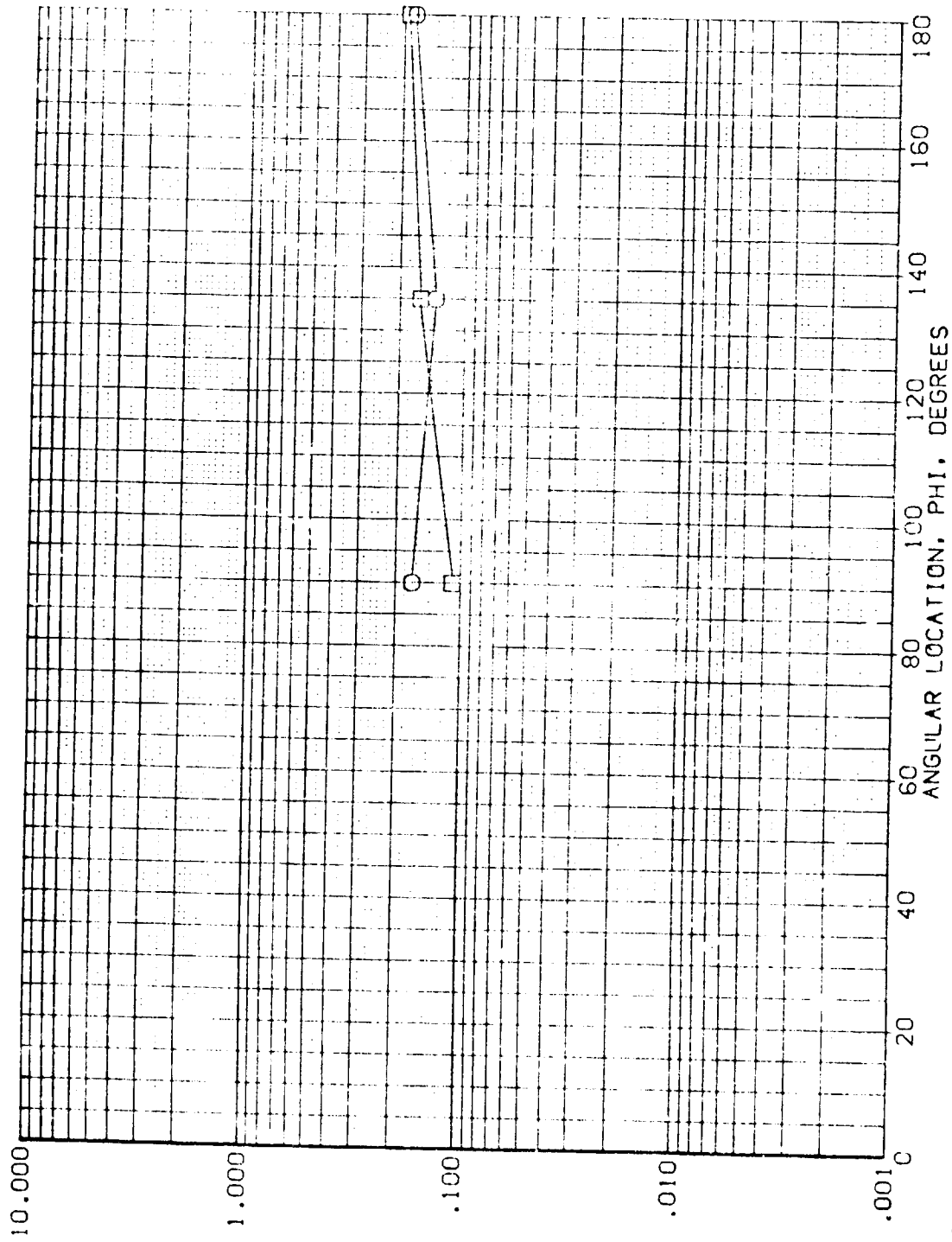


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .800

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RCHT12) B B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK
 (RCHT19) B B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-REF
 .000 .000 6.000 1.31
 .000 -5.000 6.000 1.31

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

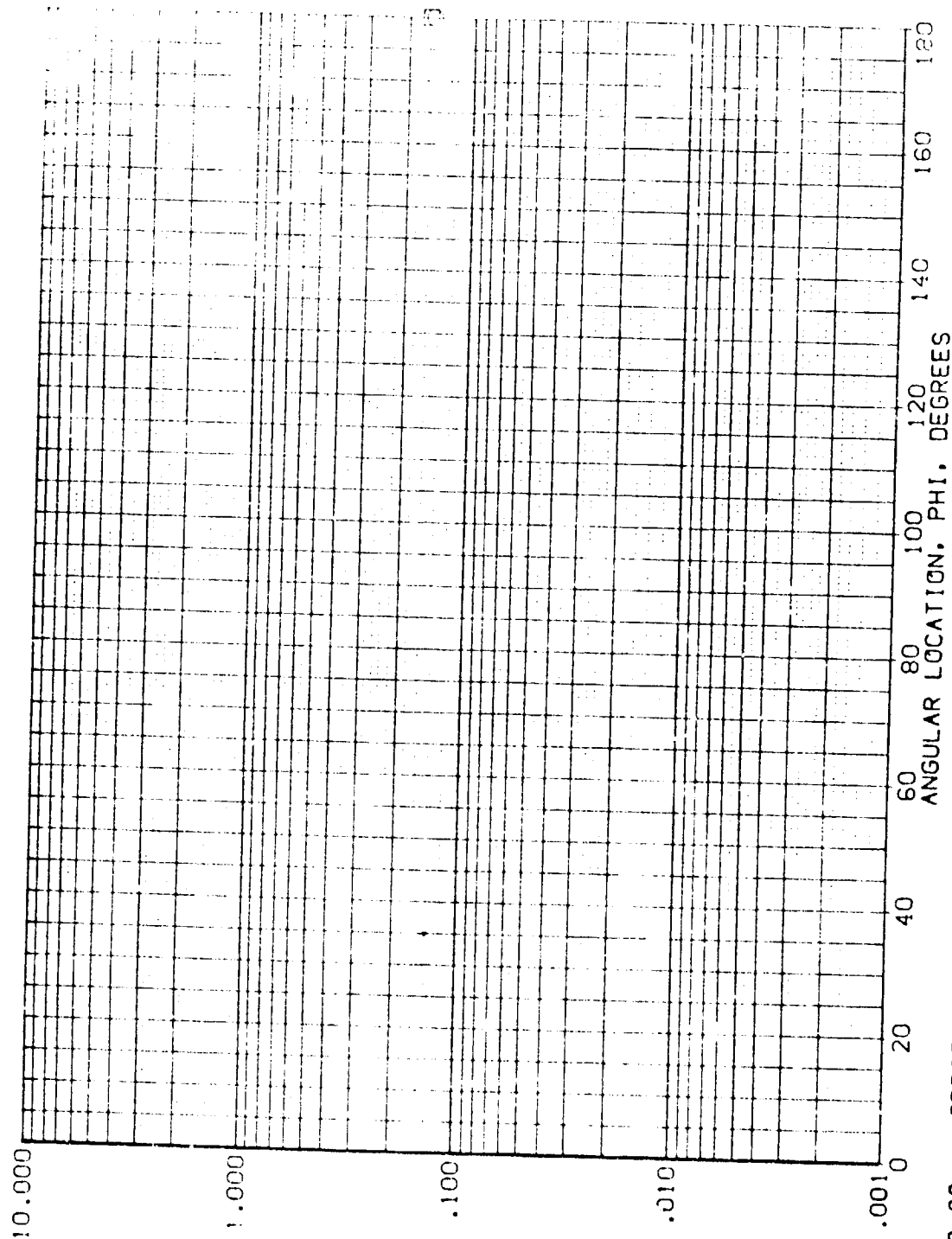
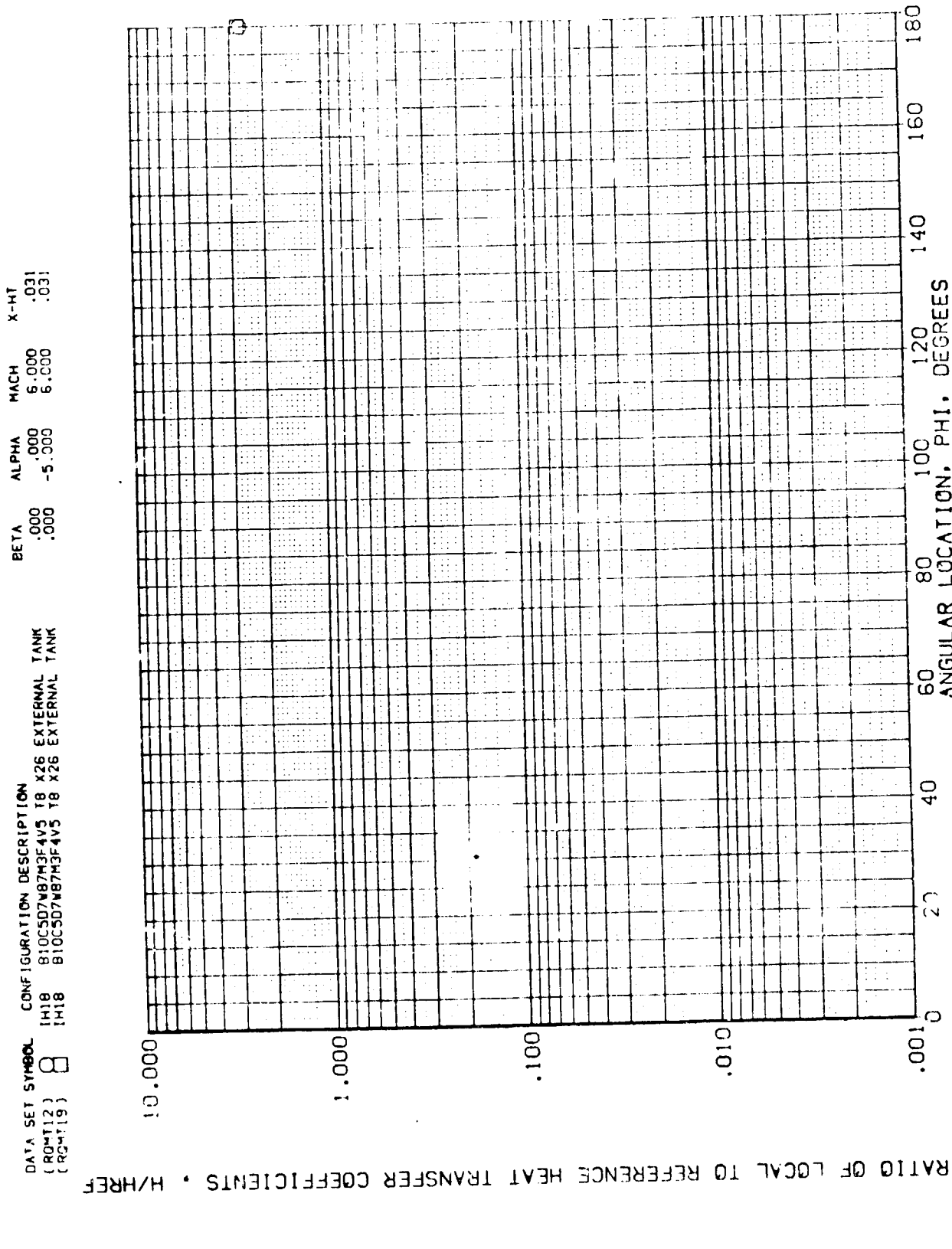


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = .850 X/L = .900



RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (P0112) B B10C507W87H3FAV5 18 X26 EXTERNAL TANK
 (P0119) B B10C507W87H3FAV5 18 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

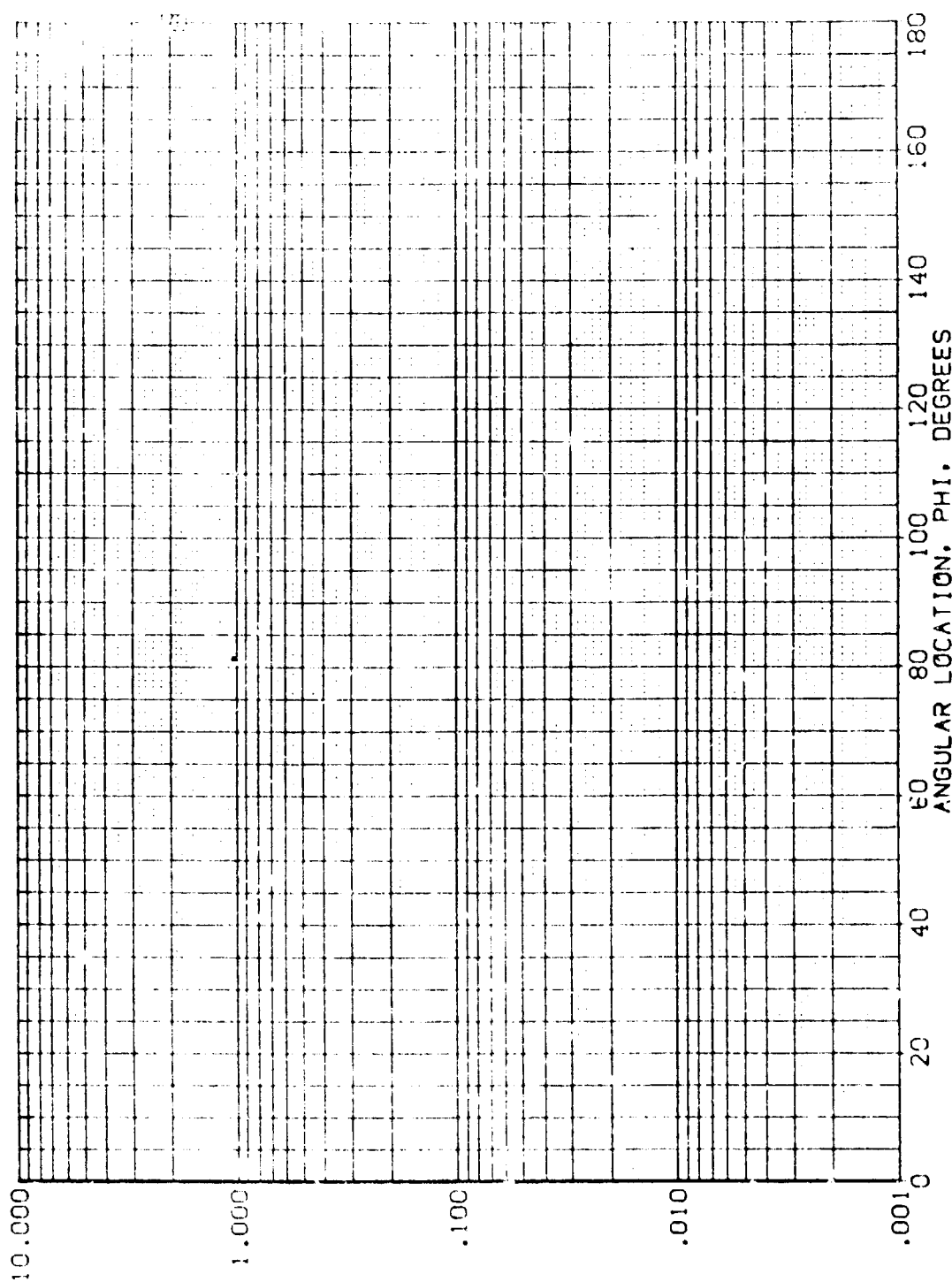


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .010

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0M112) 8 I118 B10C507#87#3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0M119) 8 I118 B10C507#87#3F4V5 T8 X26 EXTERNAL TANK

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

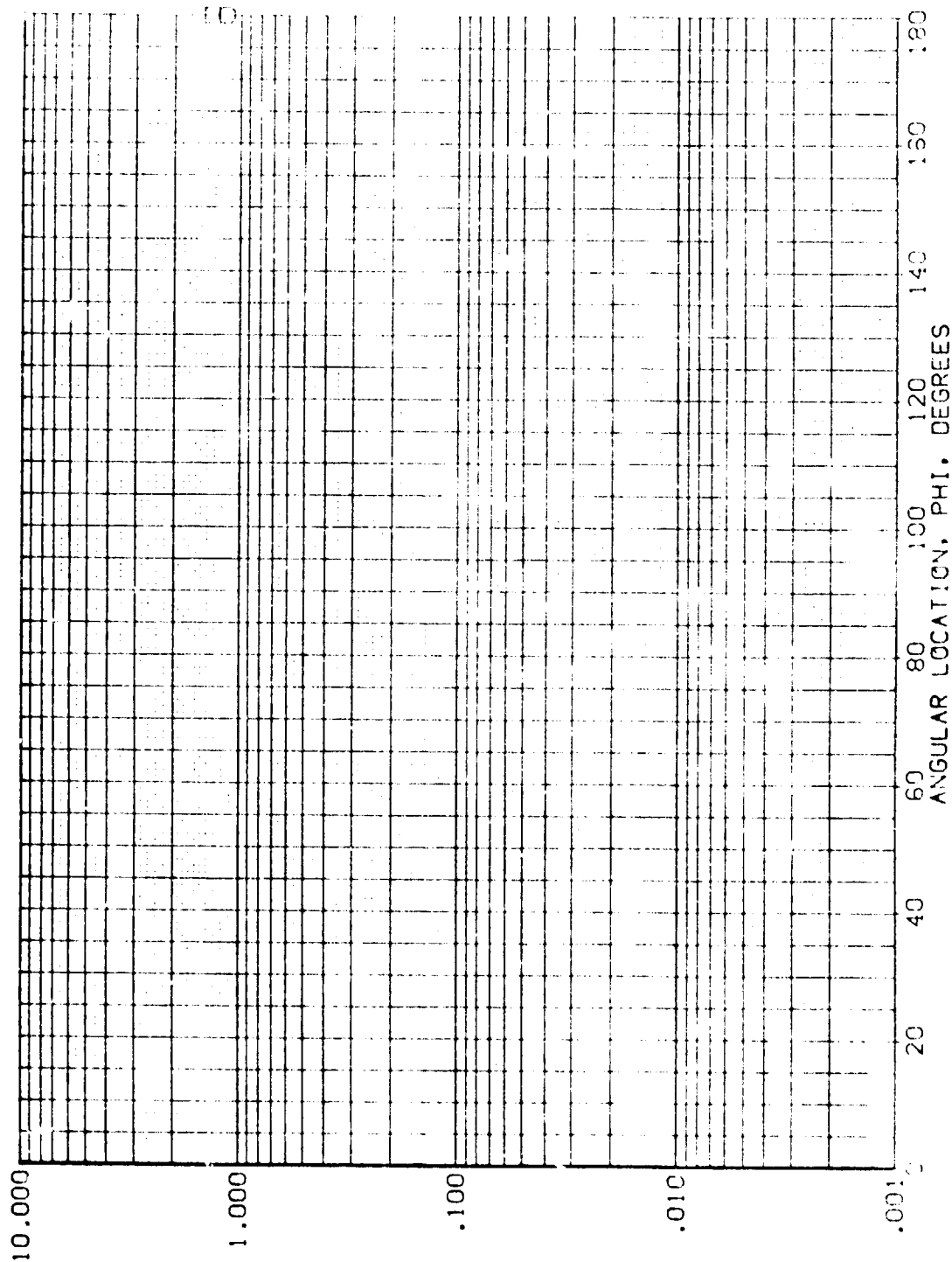


FIG 23 CRBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .020

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(RMT12)
(RMT19)

CONFIGURATION DESCRIPTION

[H18 B10C507*87*3F4V5 TB X26 EXTERNAL TANK
[H18 B10C507*87*3F4V5 TB X26 EXTERNAL TANK

BETA .000
ALPHA .000
MACH 6.000
X-HT .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

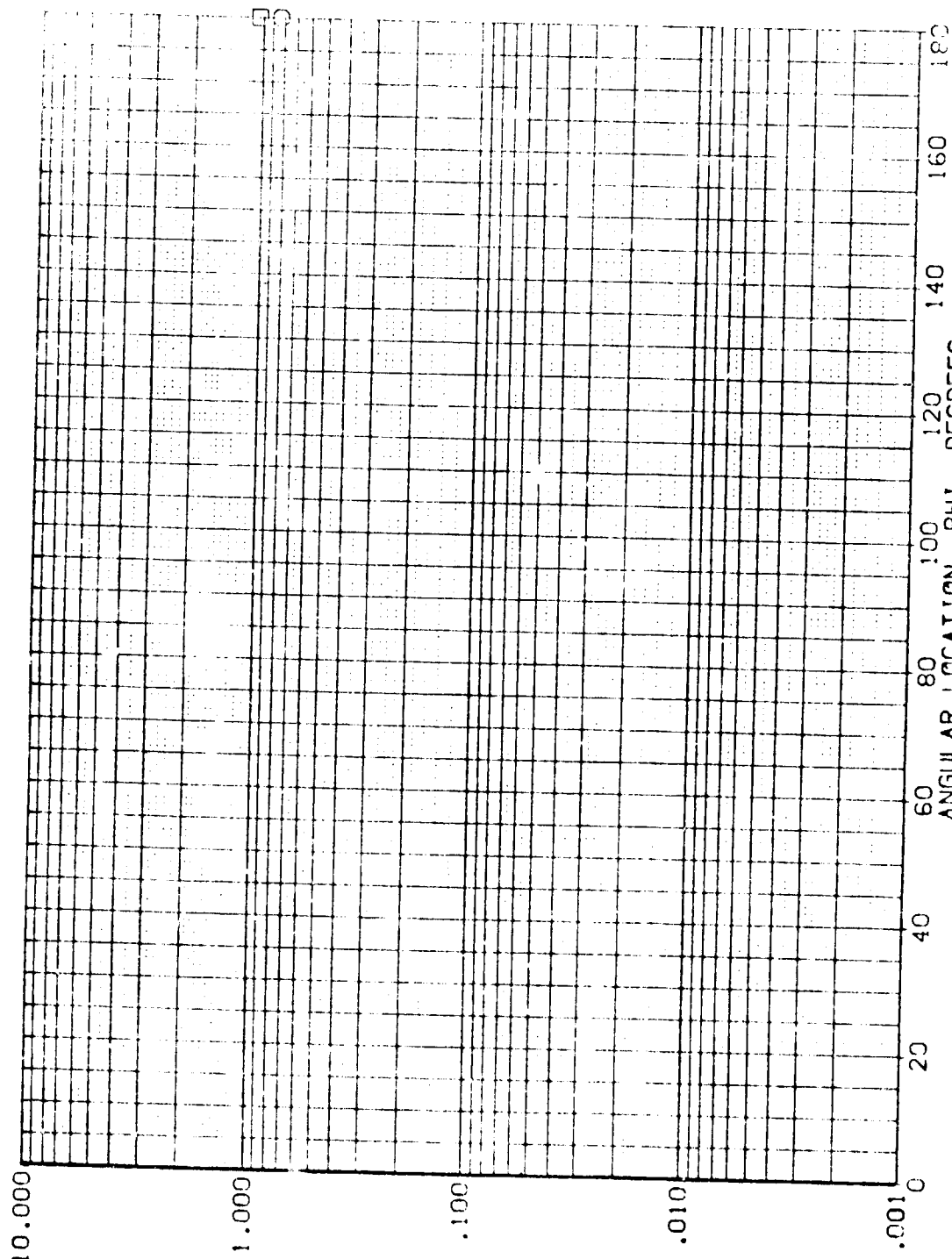


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .060

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-RT

(RIGHT12) B10C507#87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 5.000 .031

(RIGHT19) B10C507#87M3F4V5 T8 X26 EXTERNAL TANK .000 -.5.000 5.000 .031

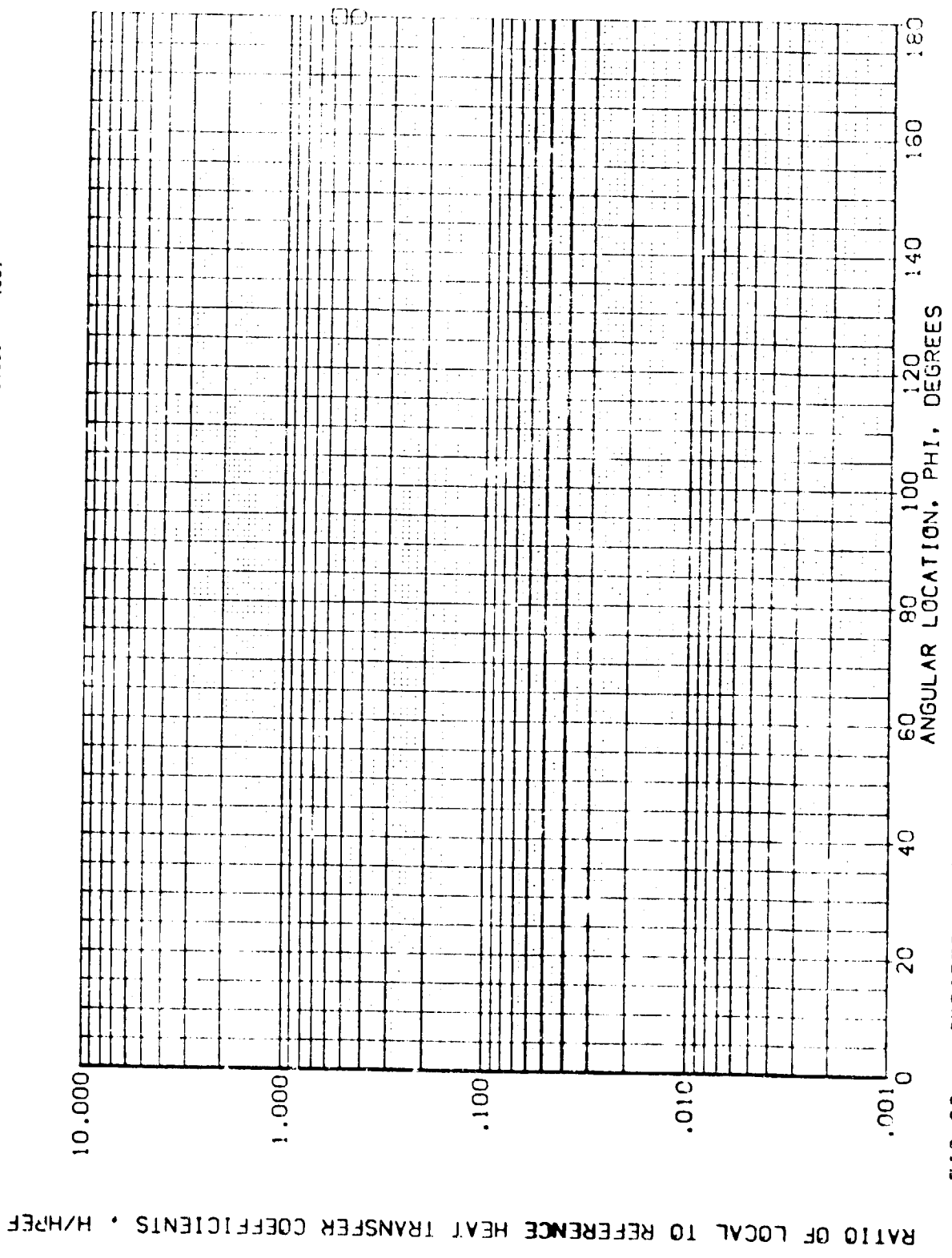


FIG 23 CRBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (P2M12) C B180507487415 18 X26 EXTERNAL TANK
 (P2M19) B180507487415 18 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

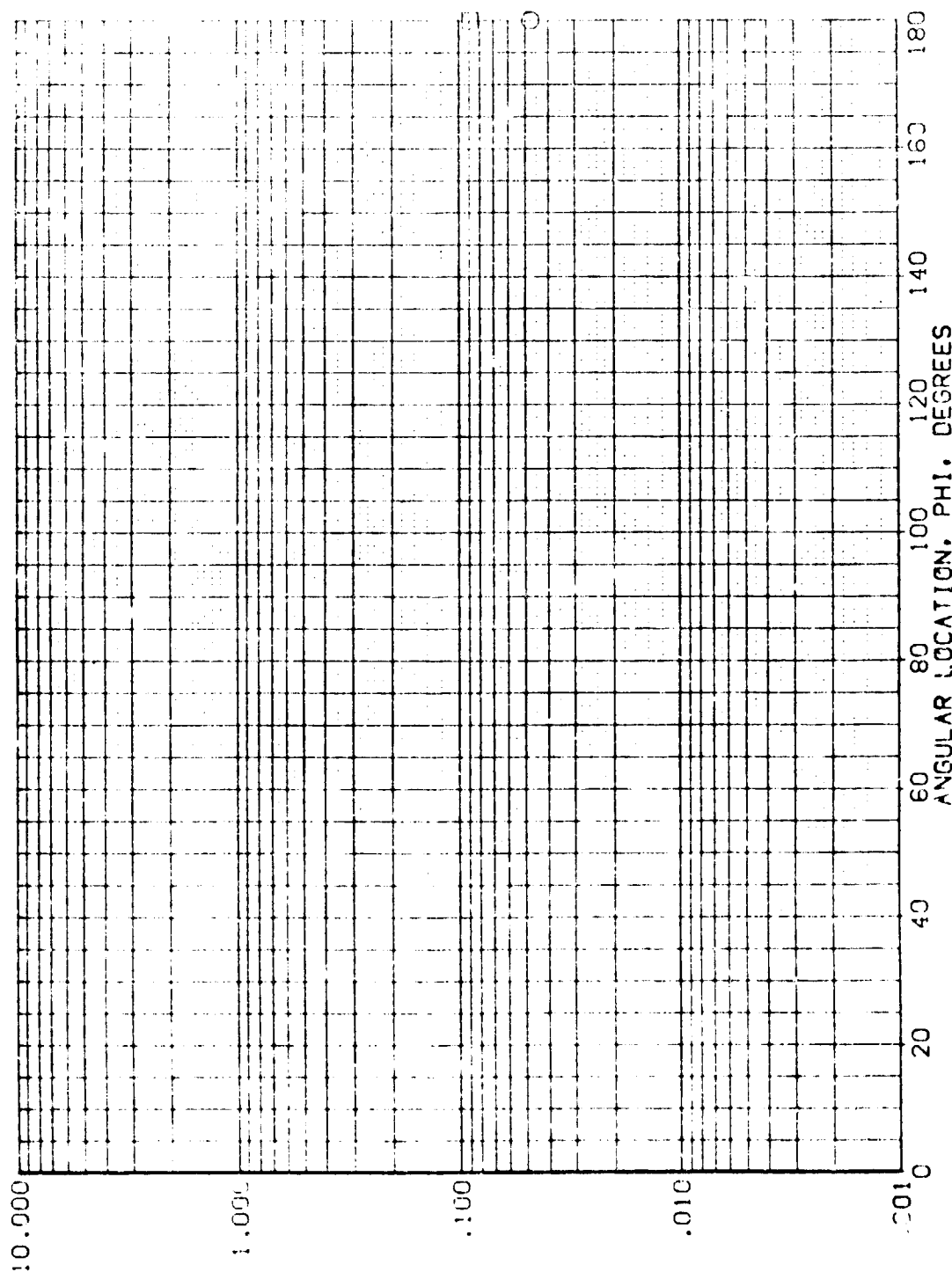


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HF = 1.000 X/L = .150

DATA SET SYMBOL CONFID. RELATION DESCRIPTION
 (RMT12) IM18 5 507W87M3E4V5 T8 X26 EXTERNAL TANK
 (RMT19) IM18 5 507W87M3E4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MATH X-HT
 .000 .003 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

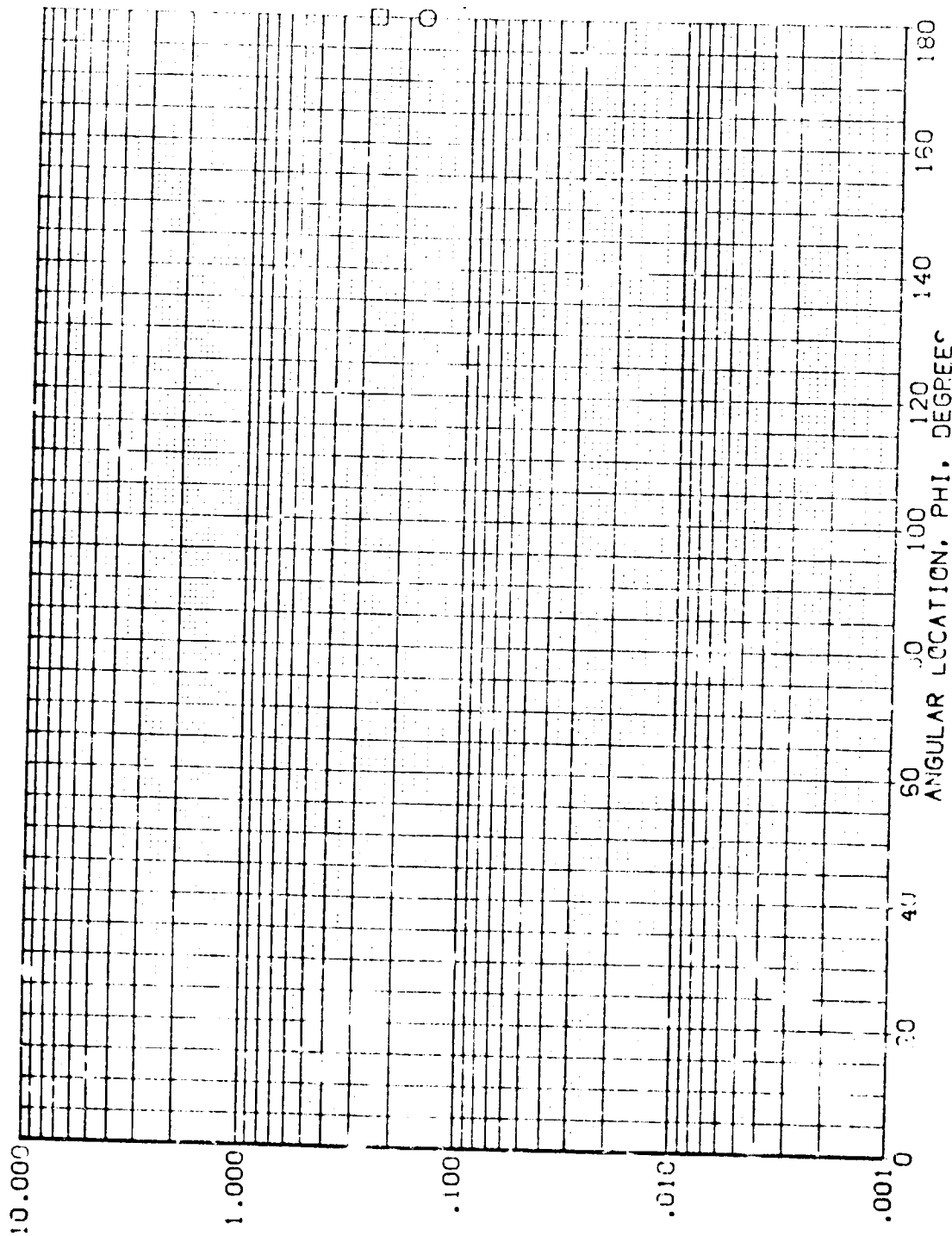


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RM/L = 4.6+3 HAM/HT = 1.000 X/L = .200

2.6

DATA SET SYMBOL (RQHT12) (RQHT19)  CONFIGURATION DESCRIPTION IH18 810C507487M3F4V5 T8 X26 EXTERNAL TANK IH18 810C507487M3F4V5 T8 X26 EXTERNAL TANK BETA .000 .000 ALPHA .000 -5.000 MACH 6.000 6.000 X-HT .031 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

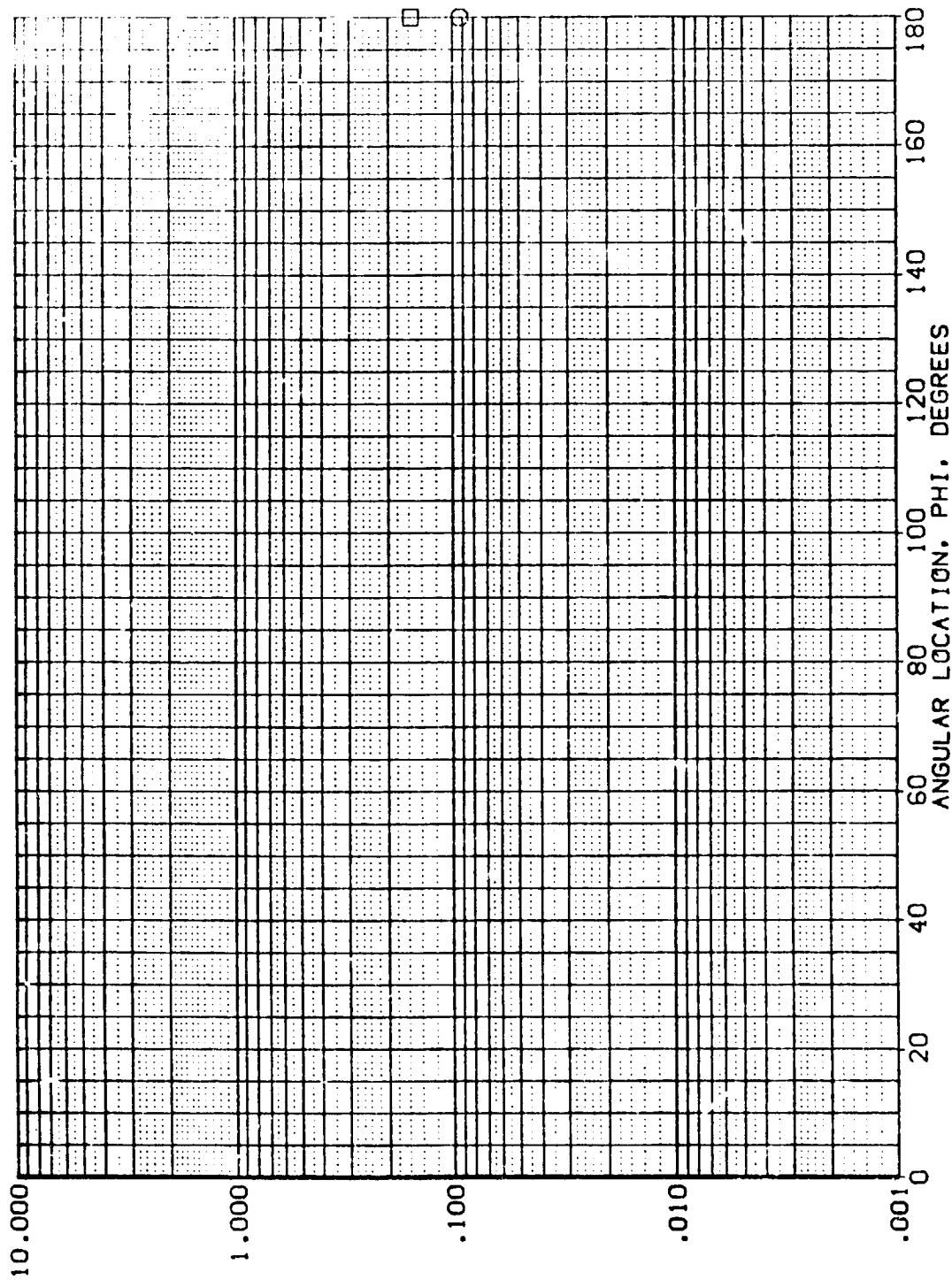


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .250

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0HT12) B10C5D7W67M3F4V5 18 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0HT19) B10C5D7W67M3F4V5 18 X26 EXTERNAL TANK .000 -5.000 5.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

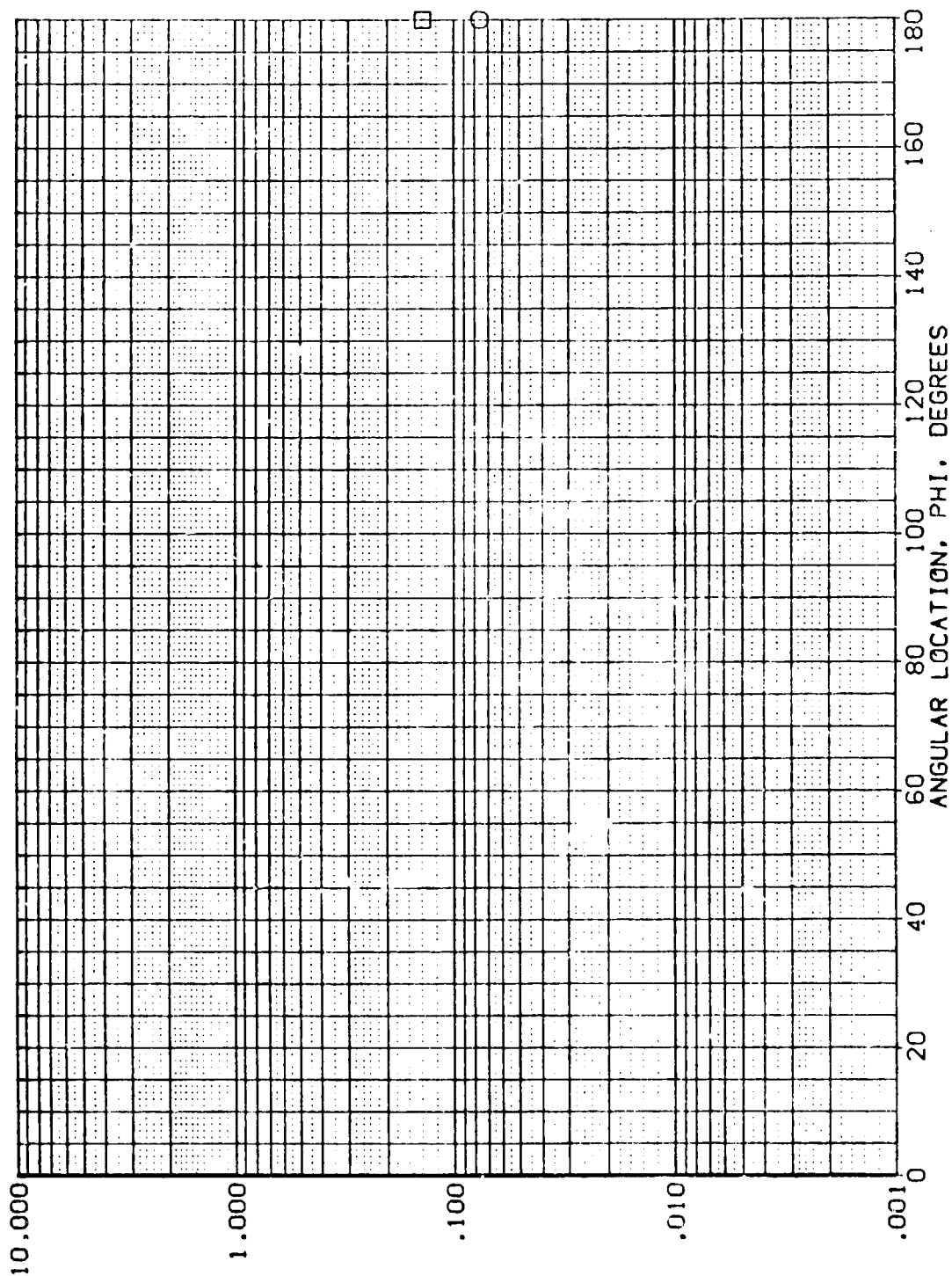




FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .300 PAGE 447

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL: (R0MT12) (R0MT19)  

CONFIGURATION DESCRIPTION

IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK
IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

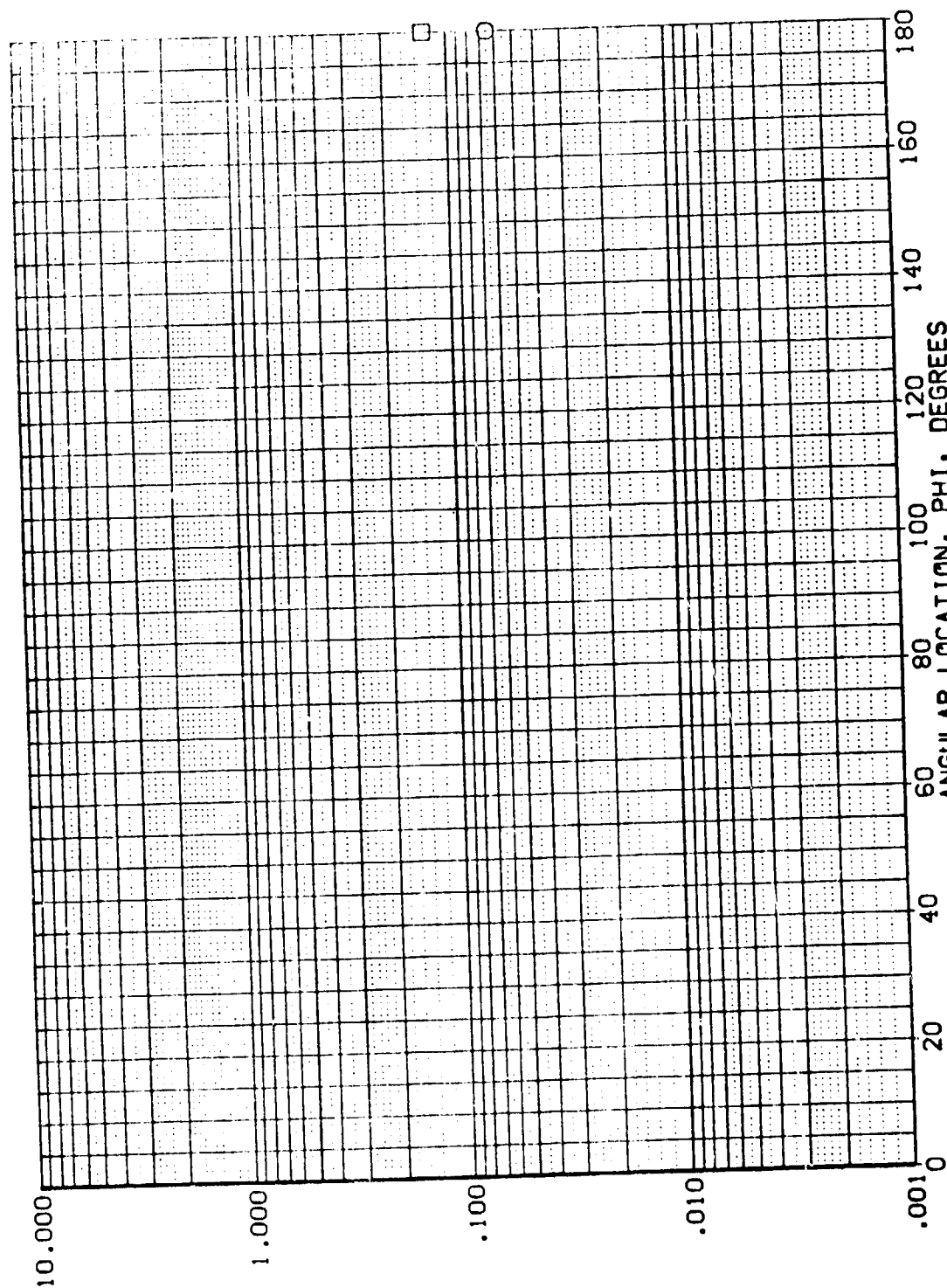


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .350 PAGE 448

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R0MT12) IM18 810C507M87M3F4V5 T8 X26 EXTERNAL TANK
(R0MT:9) IM18 810C507M87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

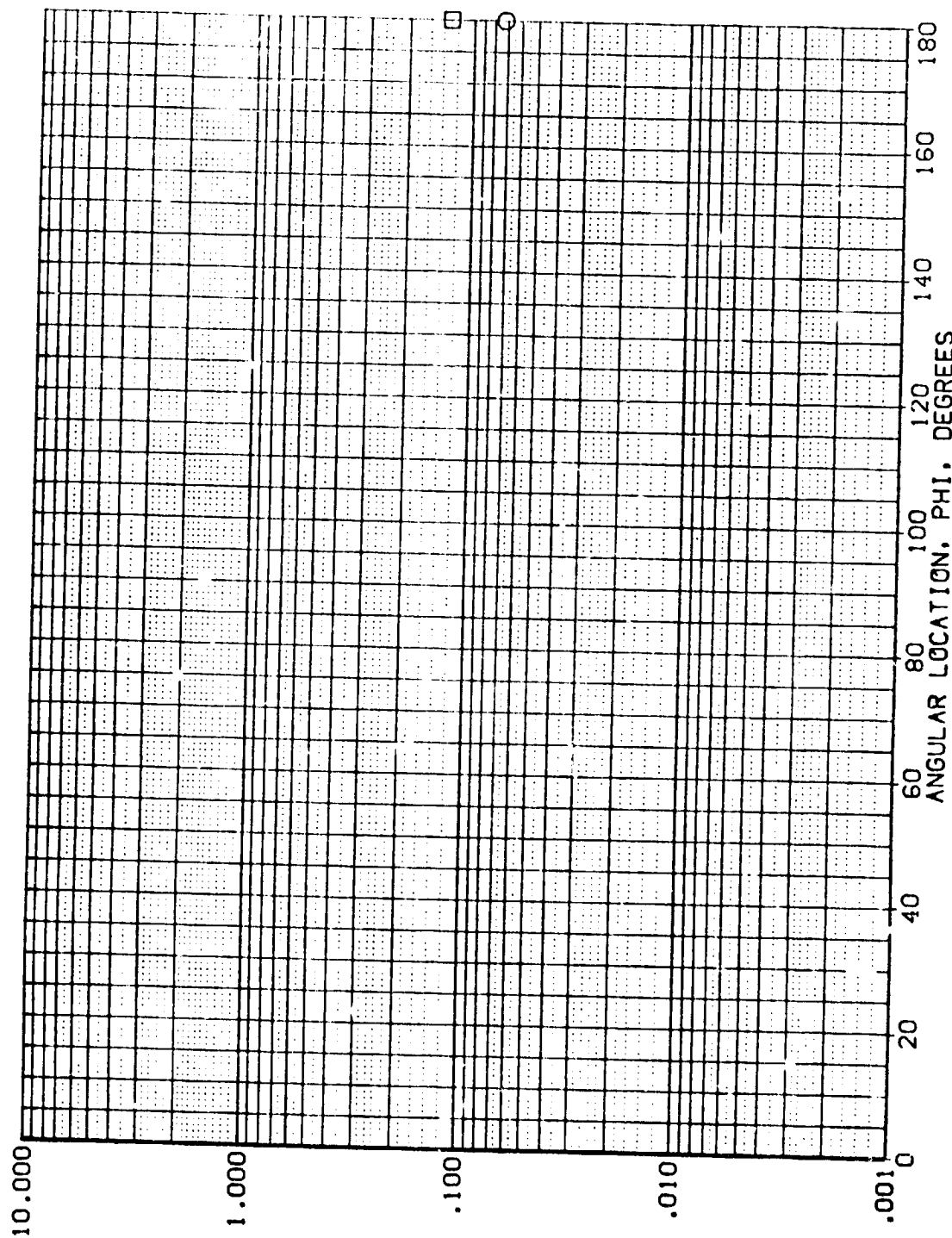


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .375

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0M12) I118 .0C5D7V87M3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0M19) I118 .0C5D7V87M3F4V5 T8 X26 EXTERNAL TANK .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

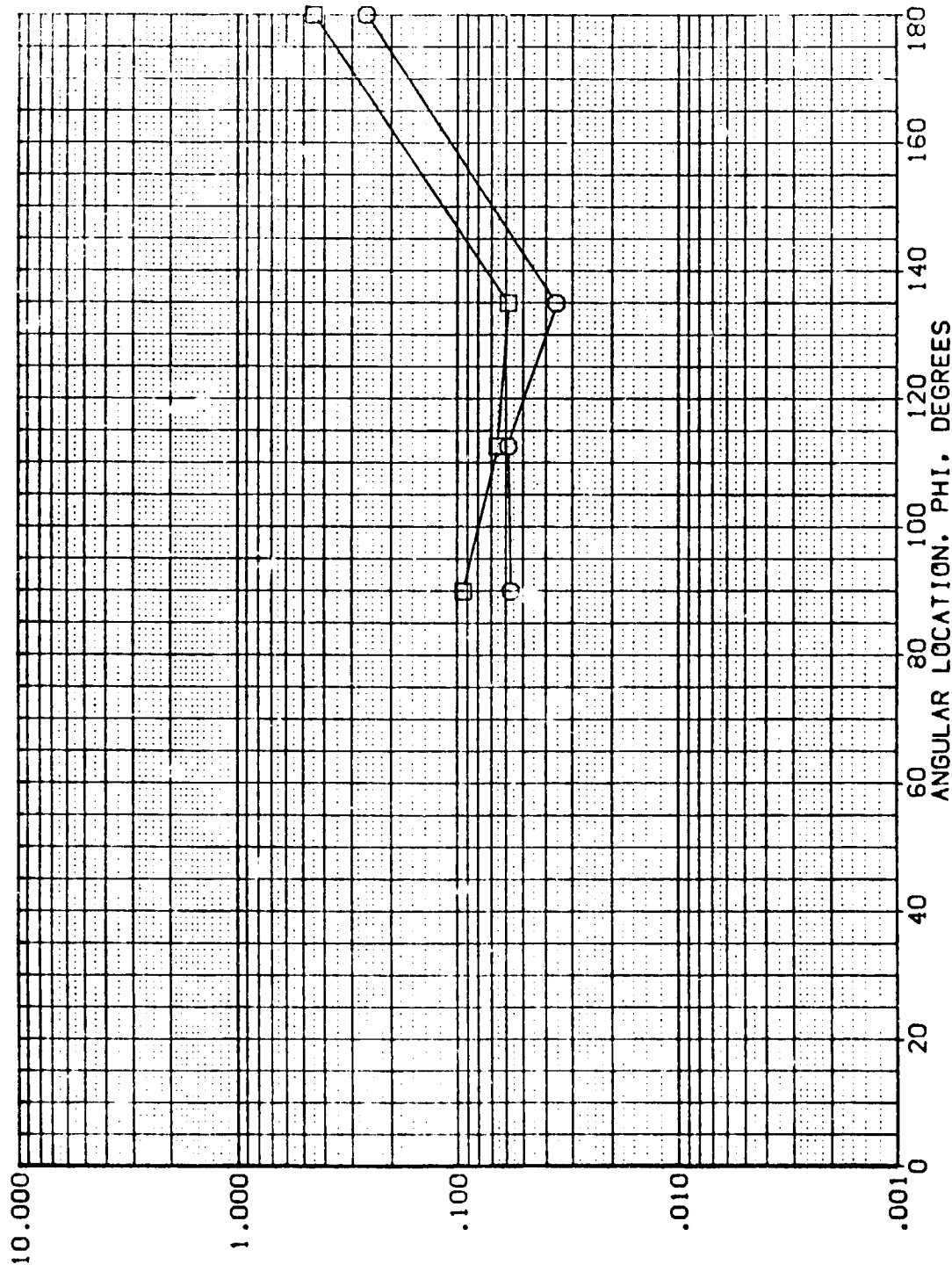


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .400 PAGE 450

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R0H112) I118 B10C507487H3F4V5 T8 X26 EXTERNAL TANK
 (R0H119) I118 B10C507487H3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

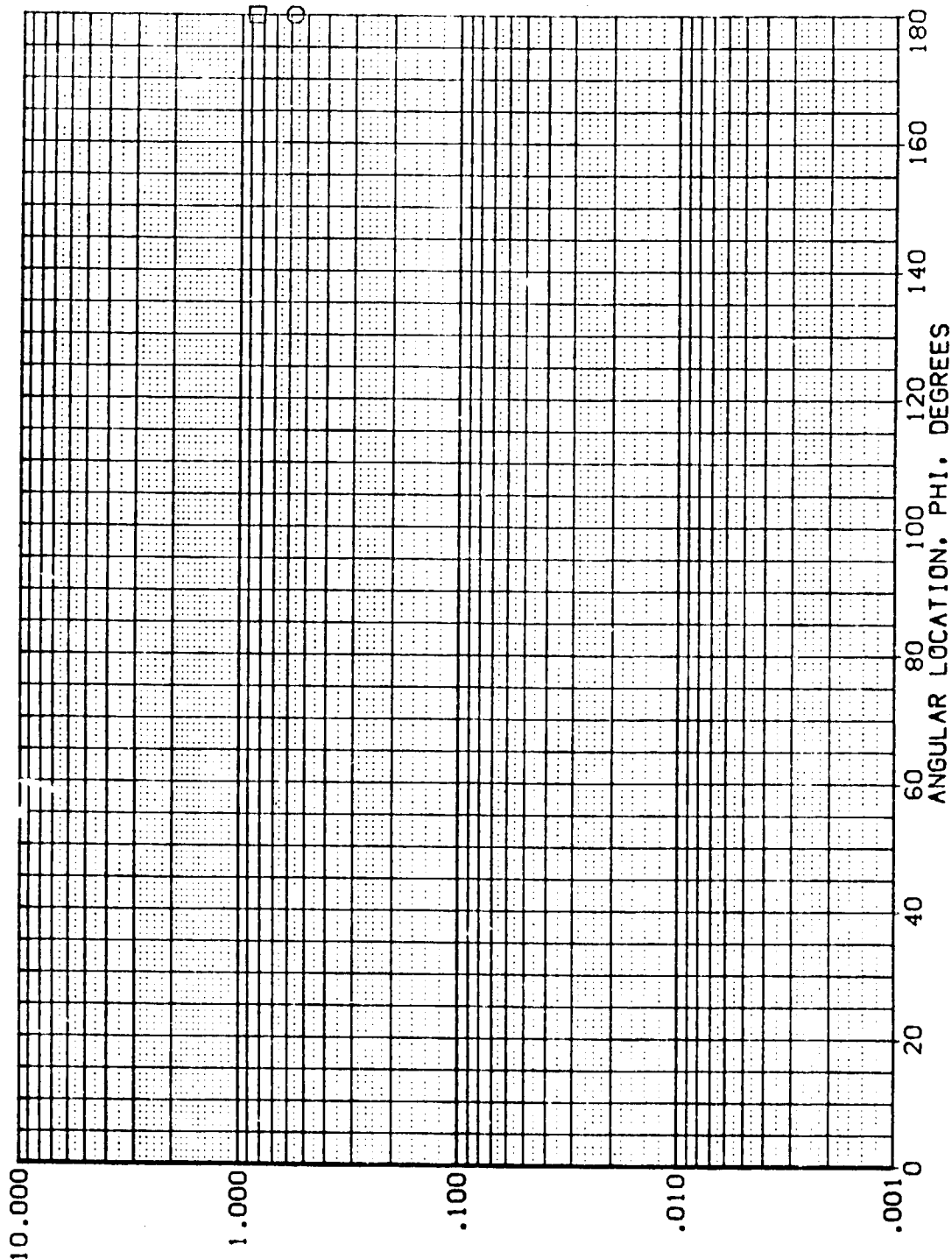


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .425

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS • H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (ROM112) 81H18 B10C507WU7H3F4V5 T8 X26 EXTERNAL TANK
 (ROM119) 81H18 B10C507WU7H3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

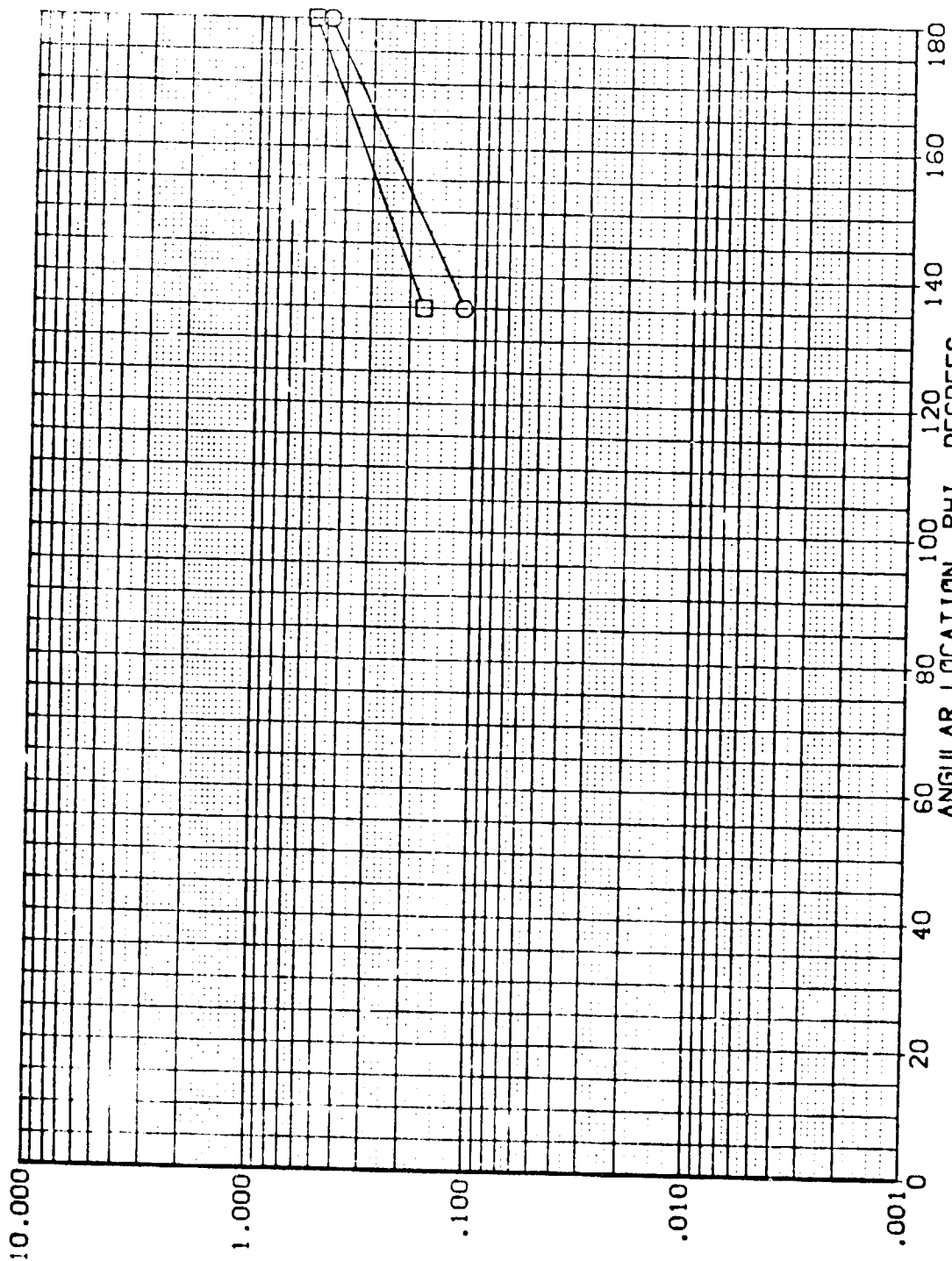


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .450

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R0MT12)
(R0MT19)

IM18 B10CS07V87H3F4V5 T8 X26 EXTERNAL TANK
IM18 B10CS07V87H3F4V5 T8 X26 EXTERNAL TANK

BETA .000
.000
ALPHA .000
-5.000
MACH 6.000
6.000
X-HT .031
.031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

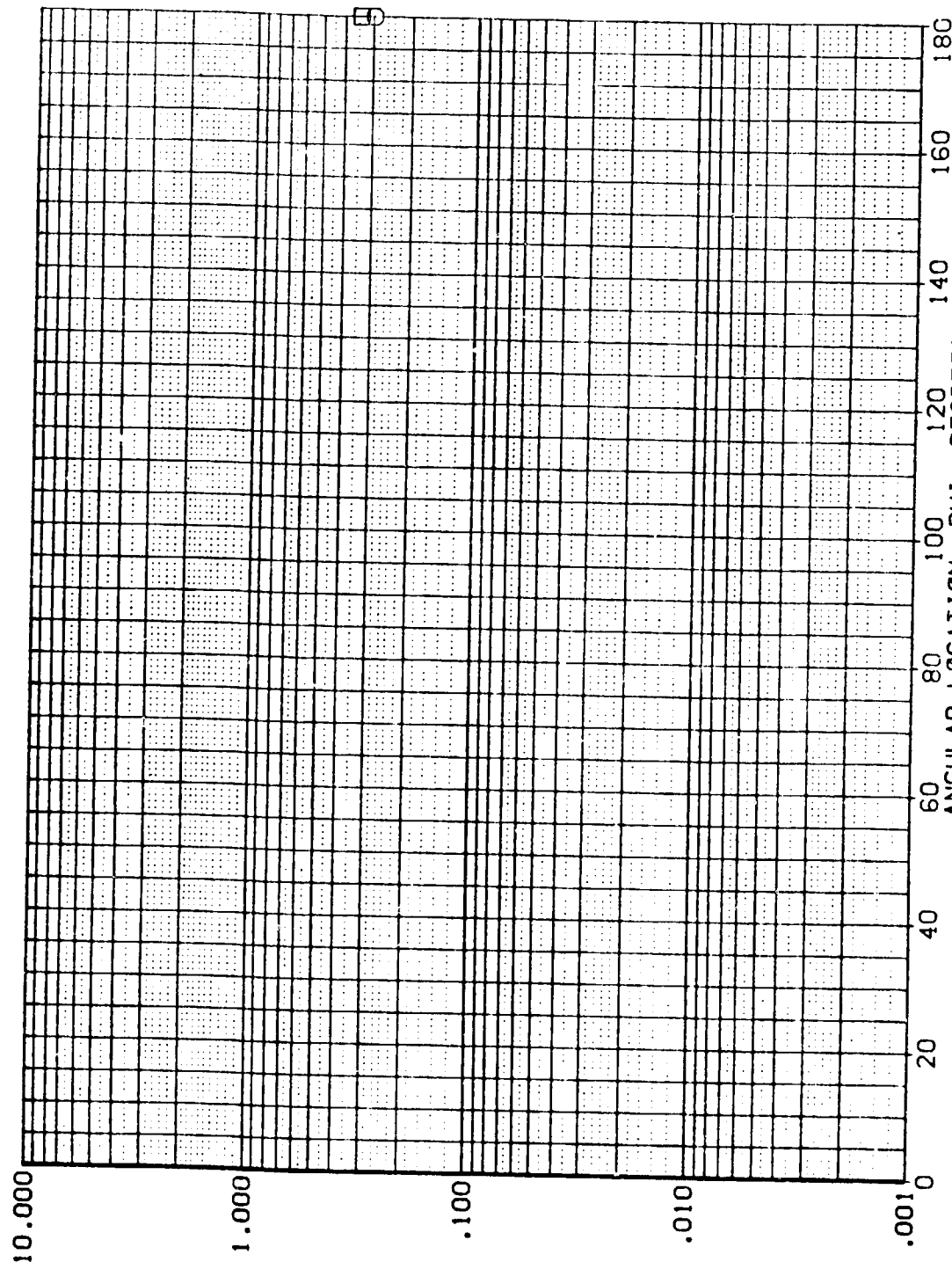


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .475

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(R0HT12) 1H18 B10C507W87H3F4V5 T8 X26 EXTERNAL TANK .000 .000 6.000 .031

(R0HT19) 1H18 B10C507W87H3F4V5 T8 X26 EXTERNAL TANK .000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

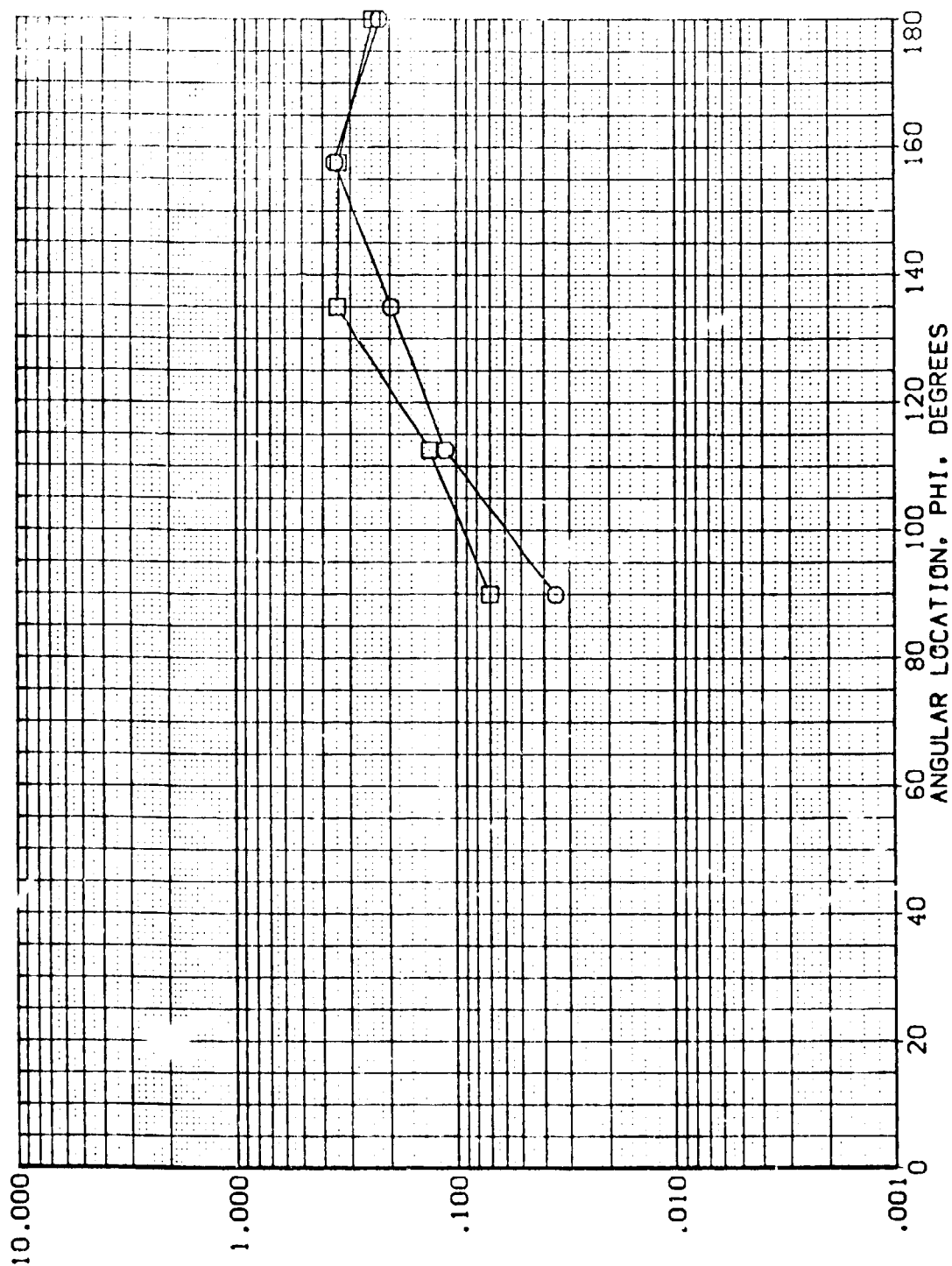


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .500

DATA SET SYMBOL (R0-T12) (R0-T19) B

CONFIGURATION DESCRIPTION
 IH18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK
 IH18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

BETA .000 .000 .031 .031

ALPHA .000 -5.000

MACH 6.000 6.000

X-HT

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

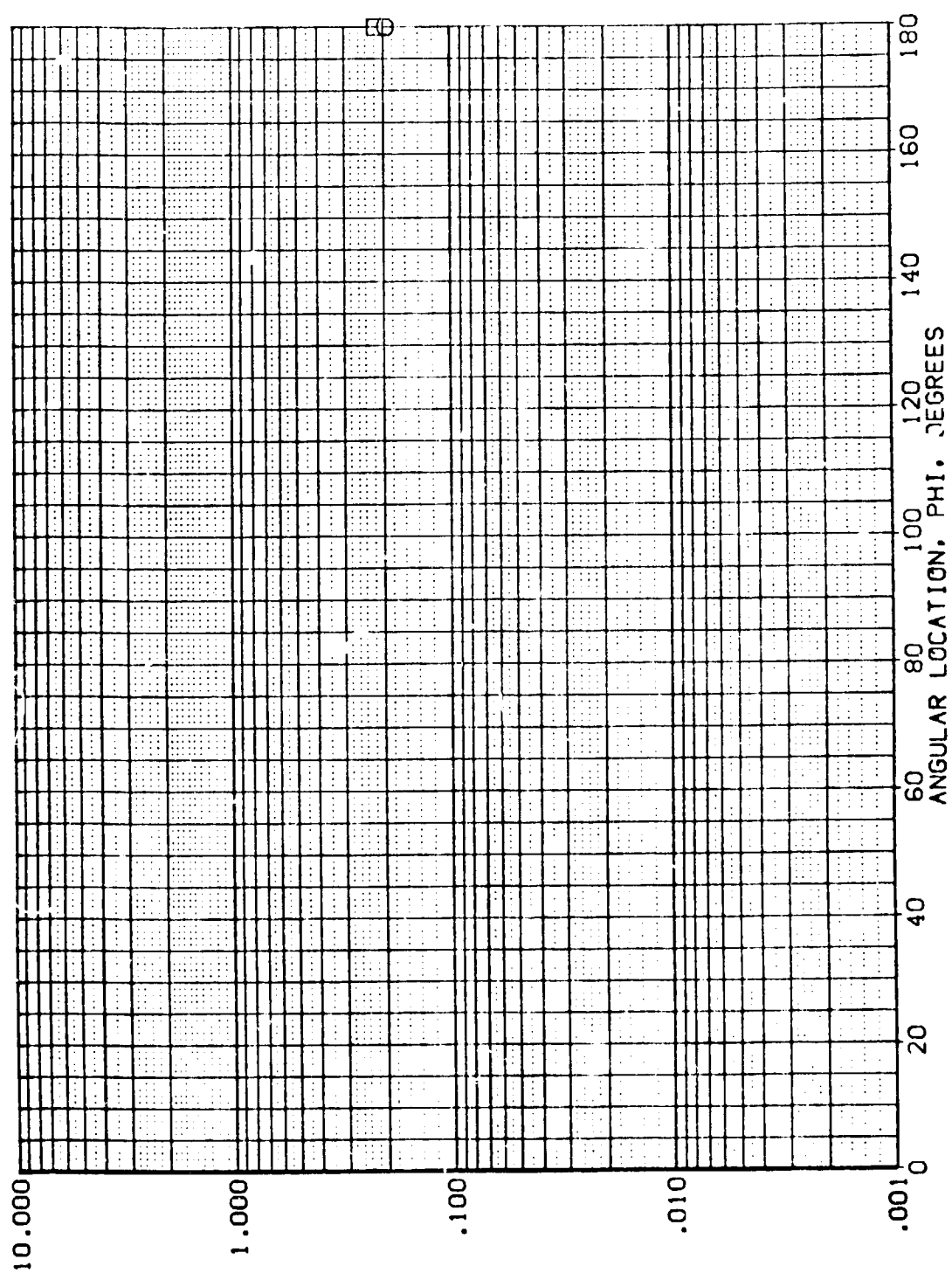


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .525

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

DATA SET SYMBOL
(RMT12)
(RMT19)

B

CONFIGURATION DESCRIPTION

IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK
IM18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

BETA .000 .000
ALPHA .000 -5.000
MACH 5.000 5.000
X-HT .031 .031

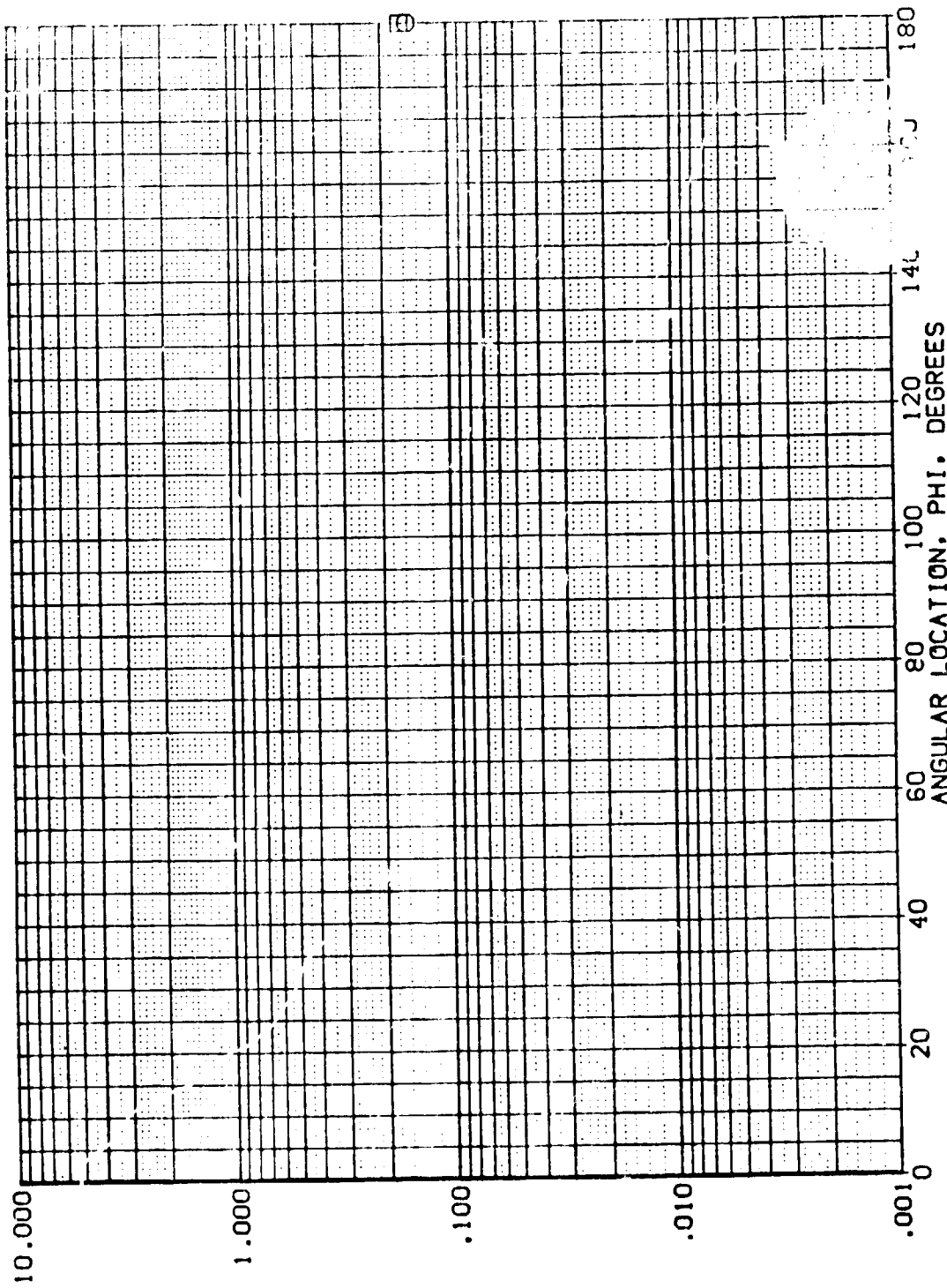


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .550

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RMT12) IN18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK
(RMT15) IN18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, h/h_{REF}

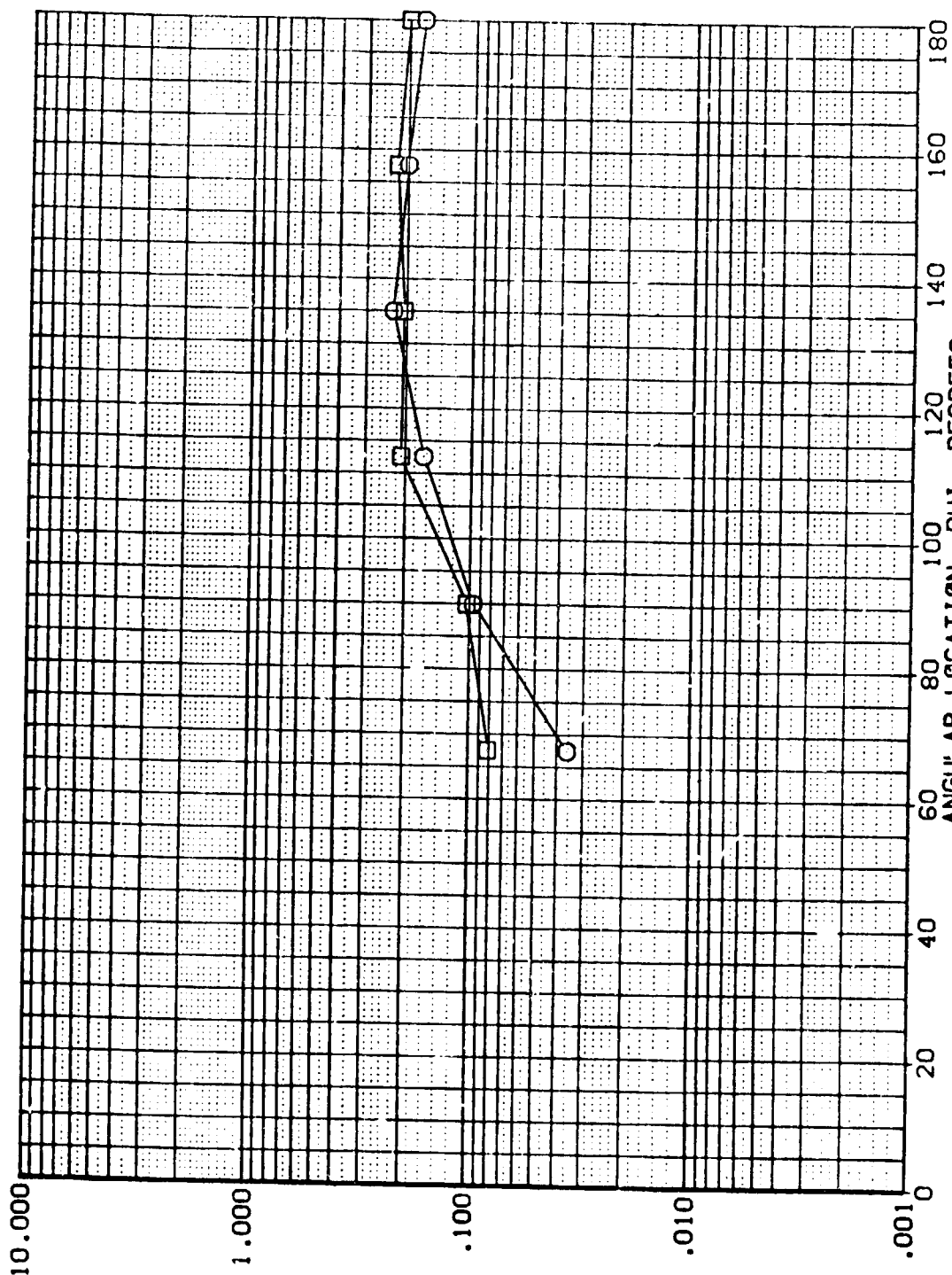


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH ϕ - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .600

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (RQHT12) 810C507M87M3F4V5 T8 X26 EXTERNAL TANK
 (RQHT19) 810C507M87M3F4V5 T8 X26 EXTERNAL TANK

BETA .000 .000
 ALPHA .000 .000
 MACH 6.000 6.000
 X-HT .031 .031

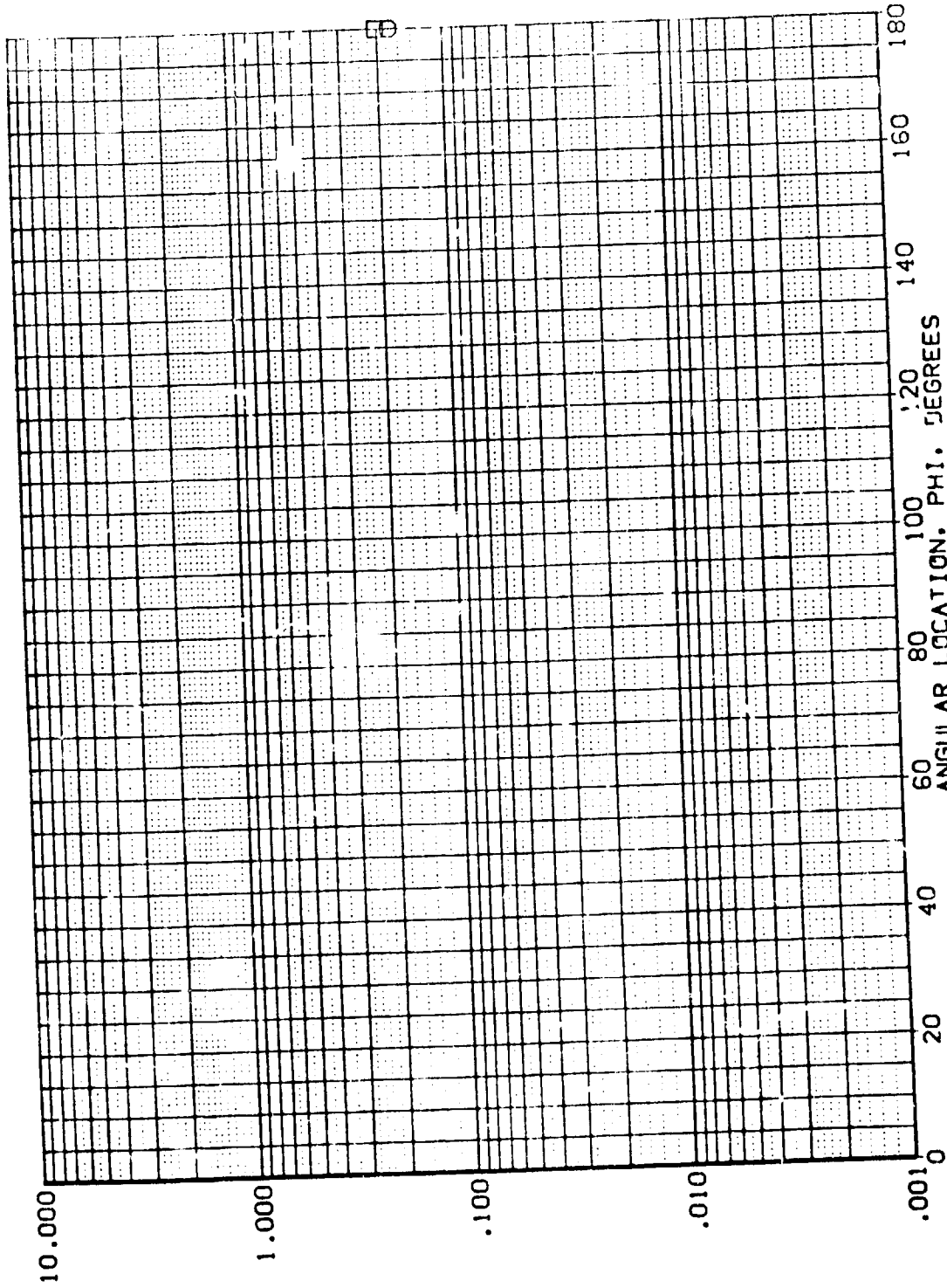


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 1.643 HAW/HT = 1.000 X/L = .650 PAGE 458

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(RCHT12)	IM18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK	.000	.000	6.000	.031
(RCHT19)	IM18 B10C5D7W87M3F4V5 T8 X26 EXTERNAL TANK	.000	-5.000	6.000	.031

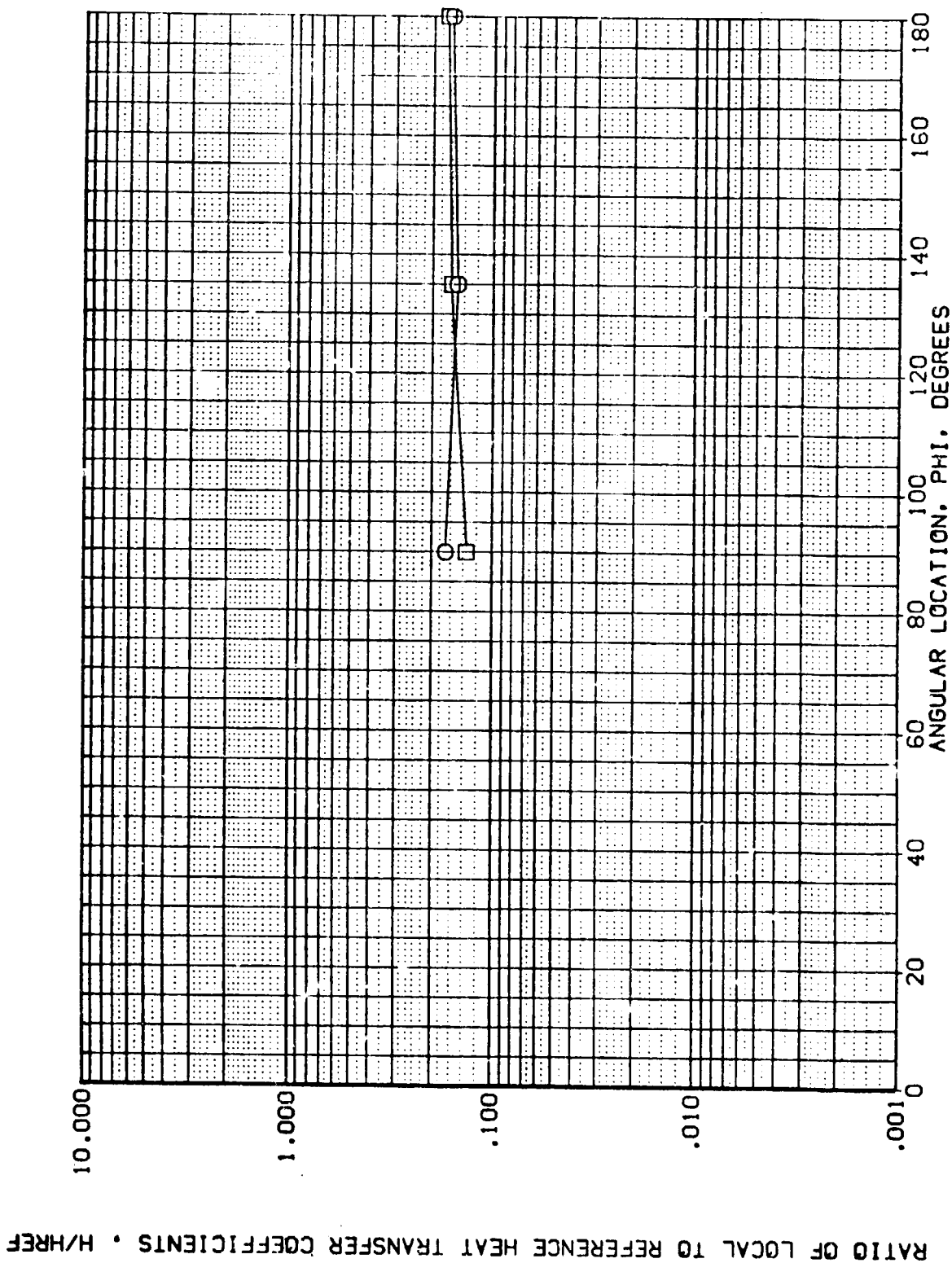


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 H/AW/HT = 1.000 X/L = .700

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R0MT12) IH18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK
(R0MT19) IH18 B10C507W87M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/H_{REF}

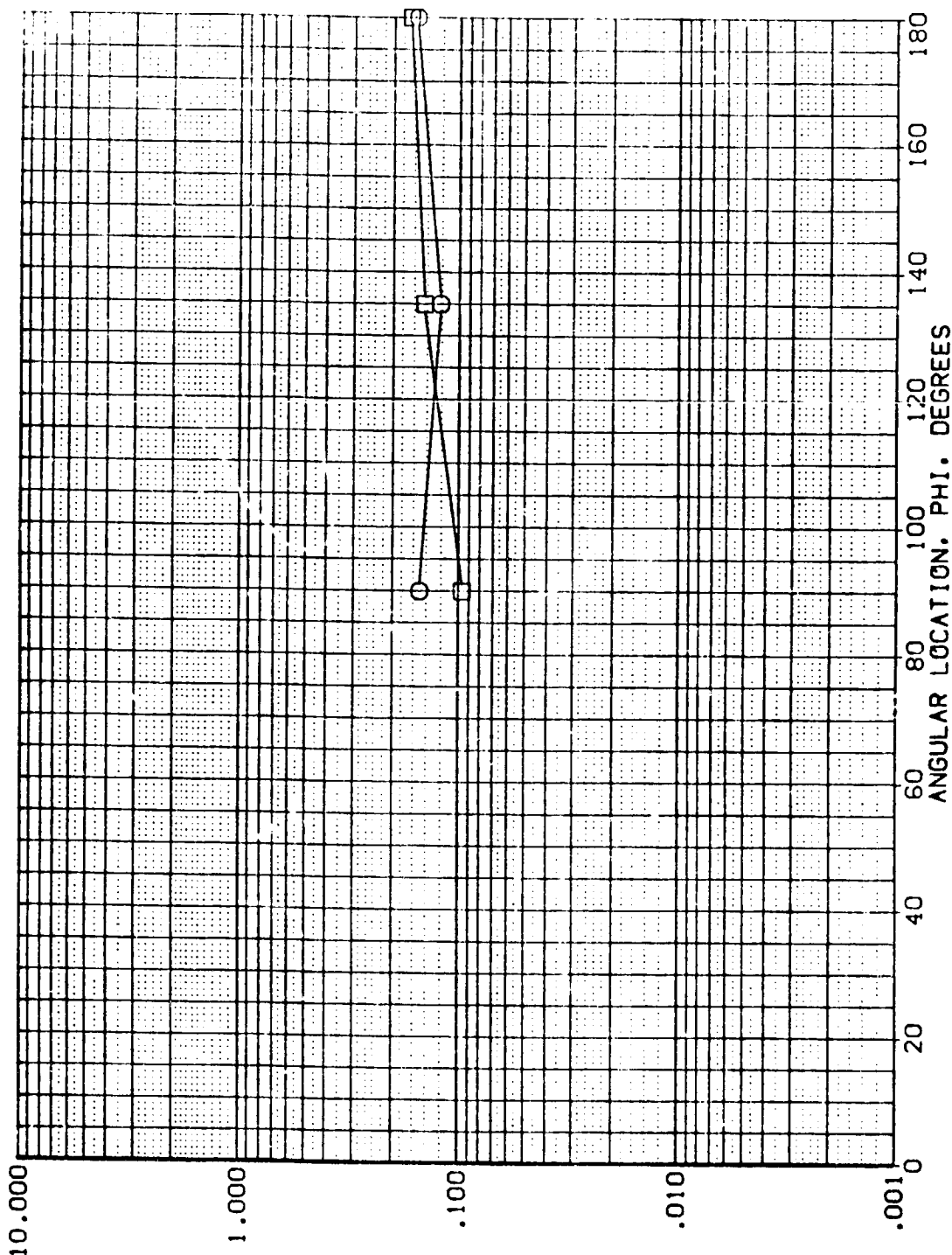


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH Φ - SMALL TRIPS

$RN/L = 4.643$ $HAW/H_T = 1.000$ $X/L = .800$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(RQMT12) ☐ IH18 B10C5D7M3F4V5 T8 X26 EXTERNAL TANK
(RQMT19) ☐ IH18 B10C5D7M3F4V5 T8 X26 EXTERNAL TANK

BETA ALPHA MACH X-HT
.000 .000 6.000 .031
.000 -5.000 6.000 .031

RATIO OF LOCAL TO REFERENCE HEAT TRANSFER COEFFICIENTS, H/HREF

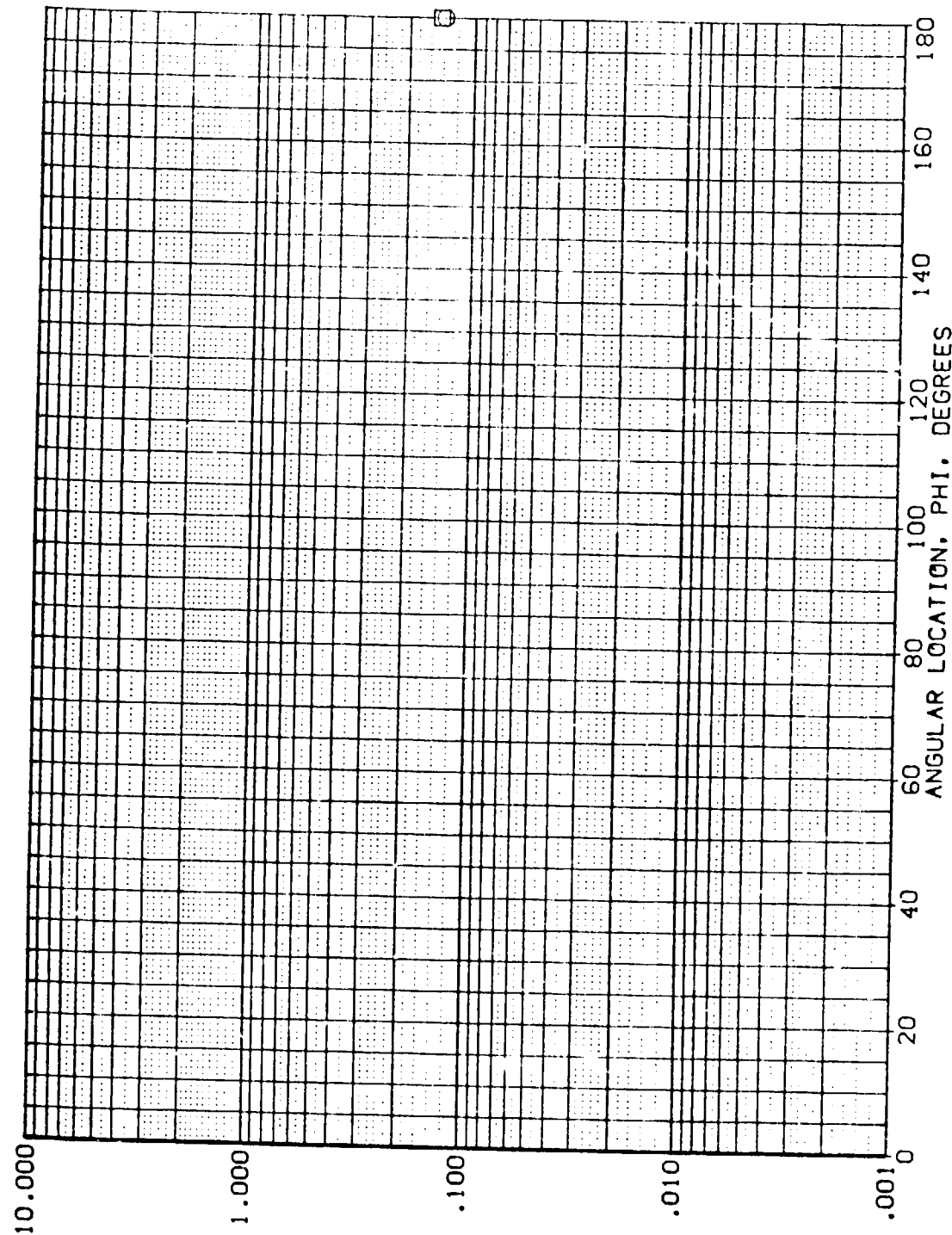


FIG 23 ORBITER + ET - ET DATA - VARIATION WITH PHI - SMALL TRIPS

RN/L = 4.643 HAW/HT = 1.000 X/L = .900

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFFICIENT, h_i/h_u

1H18 B10C5D7W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (COMB01)

SYMBOL
□

$Y(BP)$
.000
70.000

HAW/HT
.850

RN/L
4.778

REFERENCE DATA
0.0 .000

ALPHA
MACH

PARAMETRIC VALUES
.000 .000
6.000

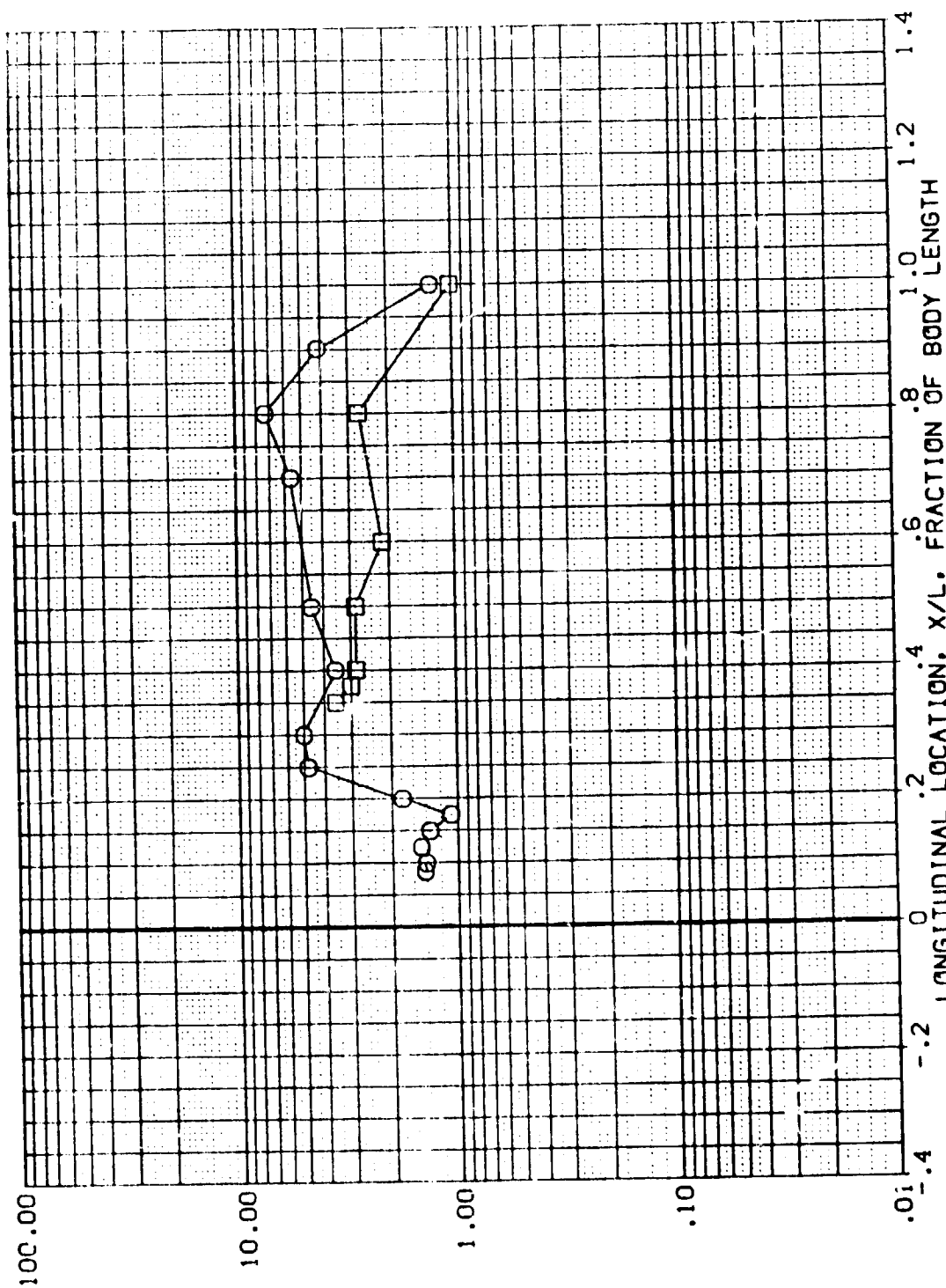


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

IH18 B10C5D7W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (COMB01)

SYMBOL Y(BP)
 70.000
 .000

HAW/HT RN/L
 .900 4.778

REFERENCE DATA
 0.0 .000

ALPHA
 MACH

PARAMETRIC VALUES
 .000 BETA .000
 6.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

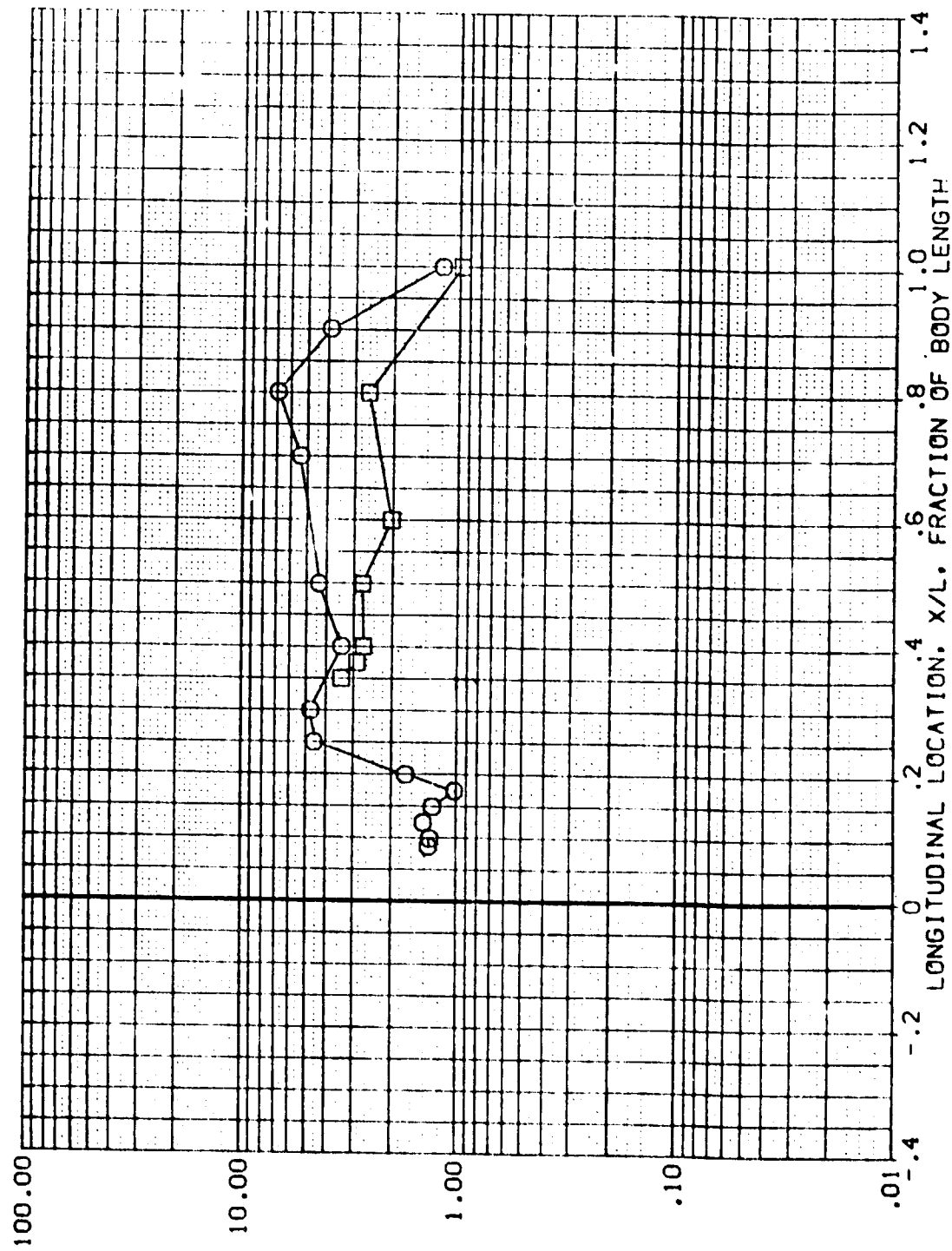


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (COMB01)

PARAMETRIC VALUES
 .000 .000
 ALPHA BETA
 MACH 6.000

REFERENCE DATA
 0.0 .000

MAW/MT RW/L
 1.000 4.778

SYMBOL
 (BP) .000
 70.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

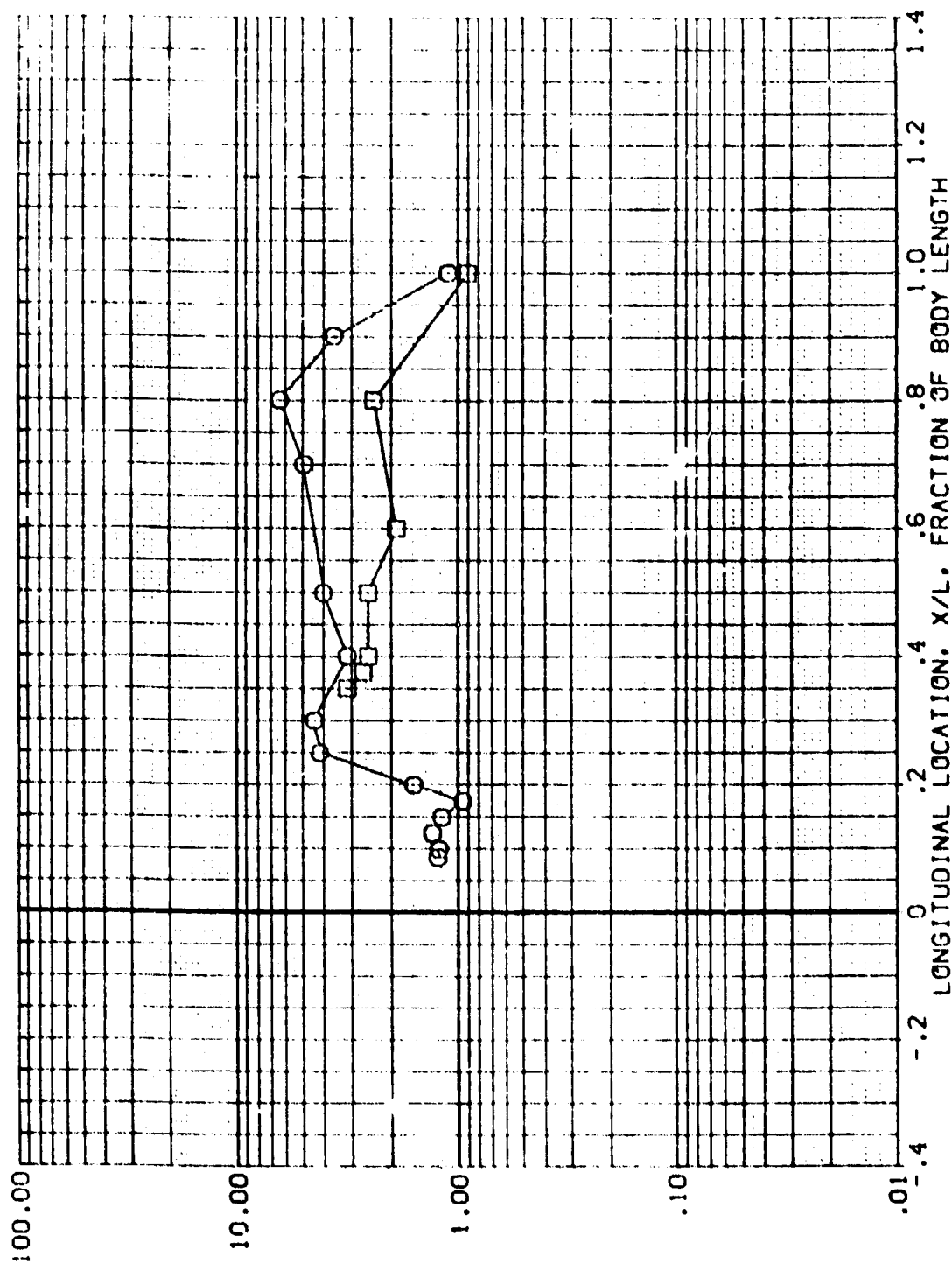


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (CQMB04)

SYMBOL	Y(BP)	HAW/HT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES
	.000	.850	4.923	0.0	MACH	-5.000 BETA
	70.000			.000		6.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

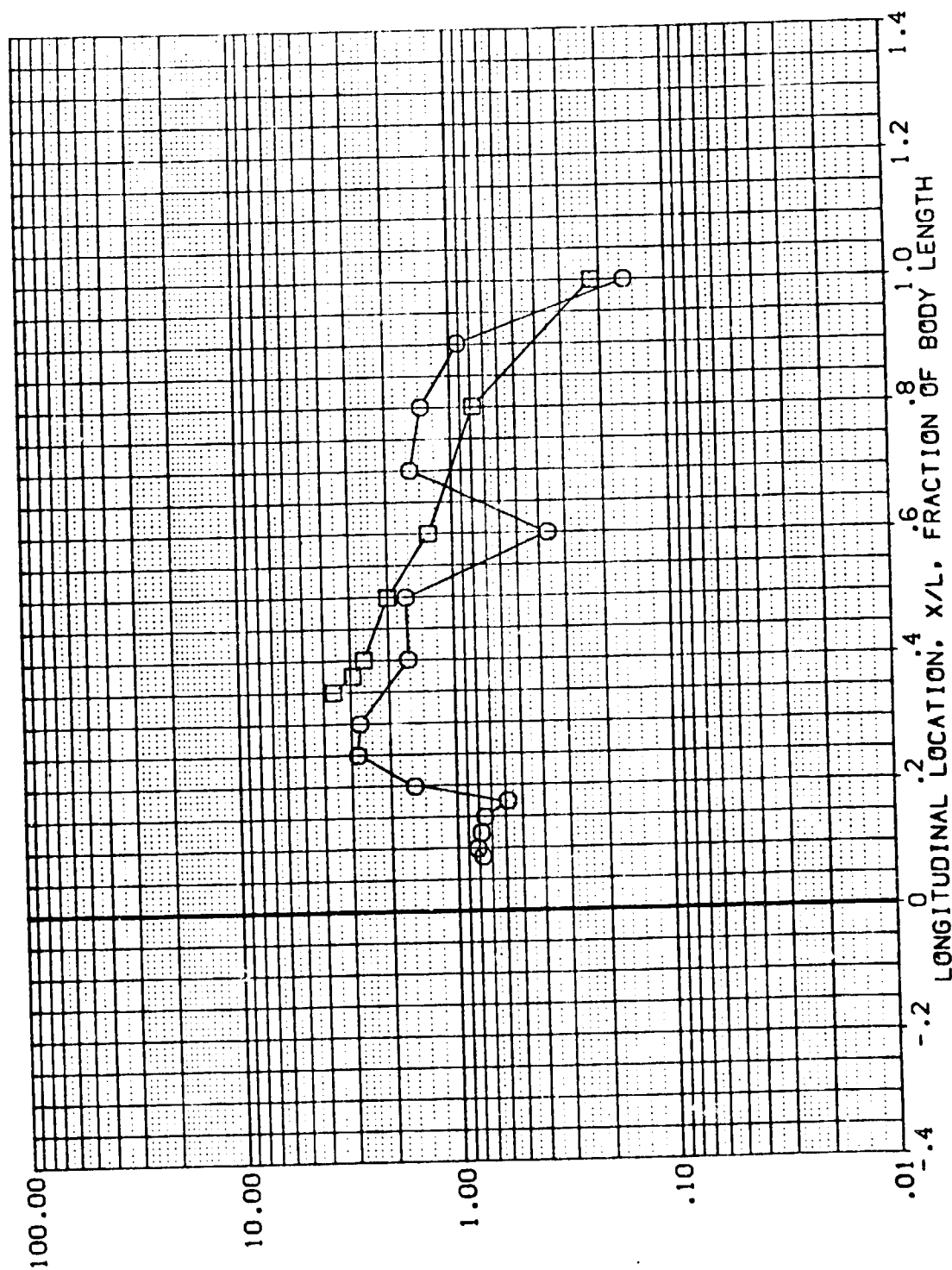


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

IH18 B10C5D7W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (CQMB04)

SYMBOL \square \circ

Y(BP) .000 70.000
HAW/HT .900
RN/L 4.923

REFERENCE DATA
0.0 .000

PARAMETRIC VALUES
ALPHA -5.000
MACH 6.000
BETA .000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF. H_i/H_u

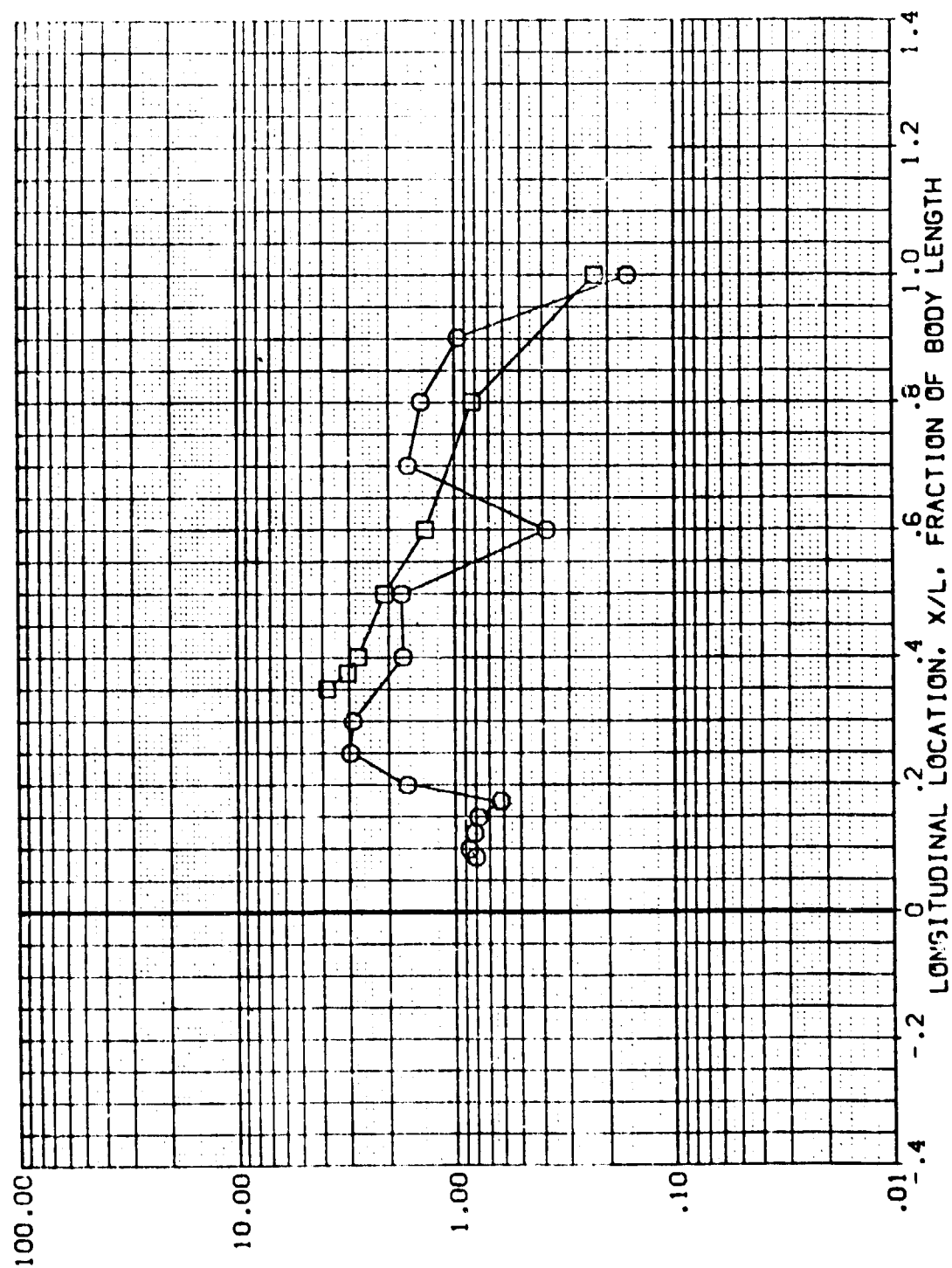


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

[H18 B10C507W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) (CQMB04)]

SYMBOL
○
□

Y(BP)
.000
70.000

MAV/HT
1.000

RN/L
4.923

REFERENCE DATA
0.0
.000

ALPHA
MACH

PARAMETRIC VALUES
-5.000 BETA
5.000 .000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., H_i/H_u

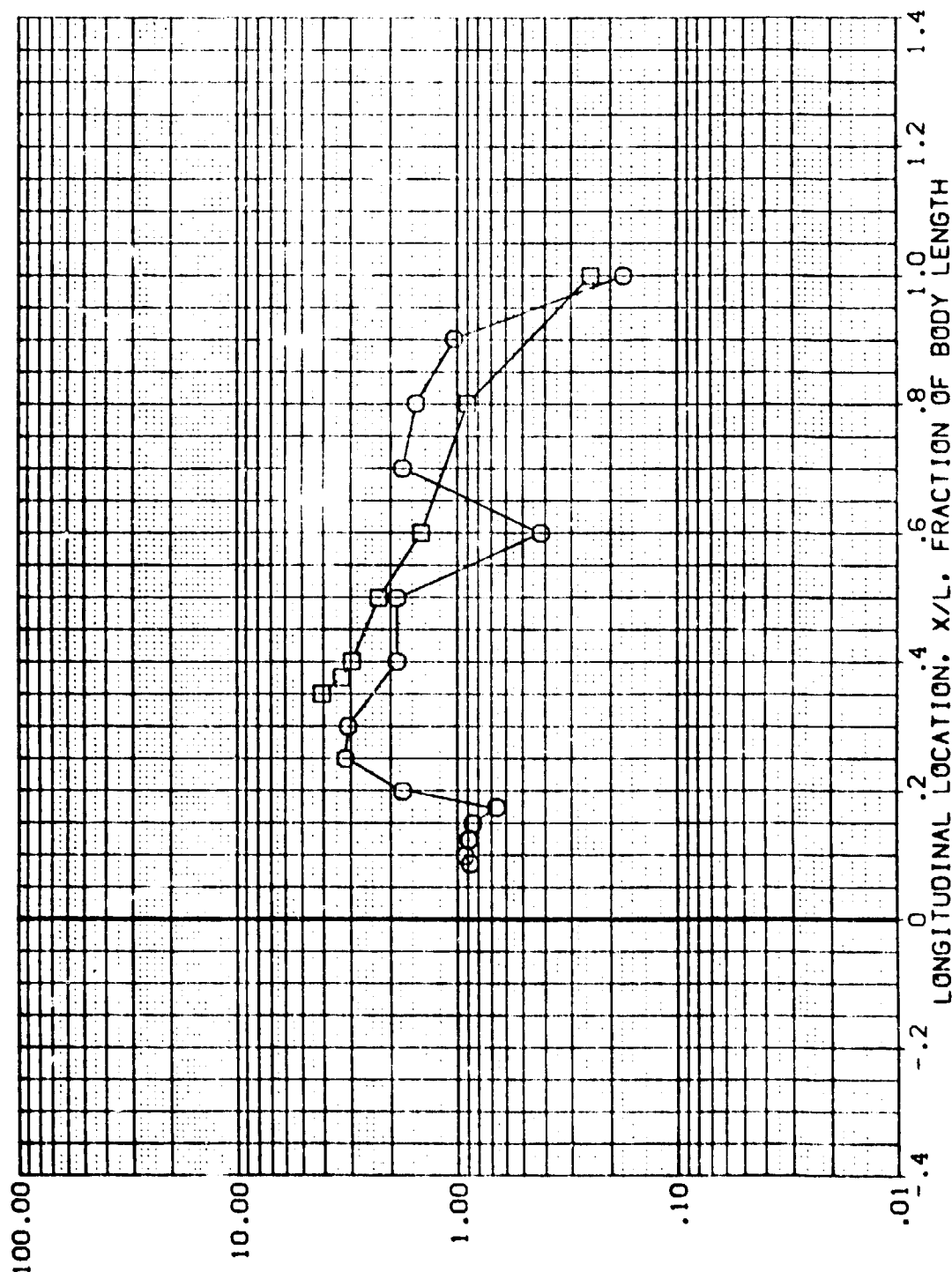


FIG 24 INTERFERENCE EFFECTS ON ORBITER BODY DATA - NO TRIPS

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

IH18 B10C5D7W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (CQMB11)

SYMBOL

$\gamma(\text{SP})$
 .000
 70.000

HAW/HT
 .850

RN/L
 4.728

REFERENCE DATA
 0.0 .000

ALPHA
 HACH

PARAMETRIC VALUES
 .000 BETA
 6.000 γ -HT
 .031

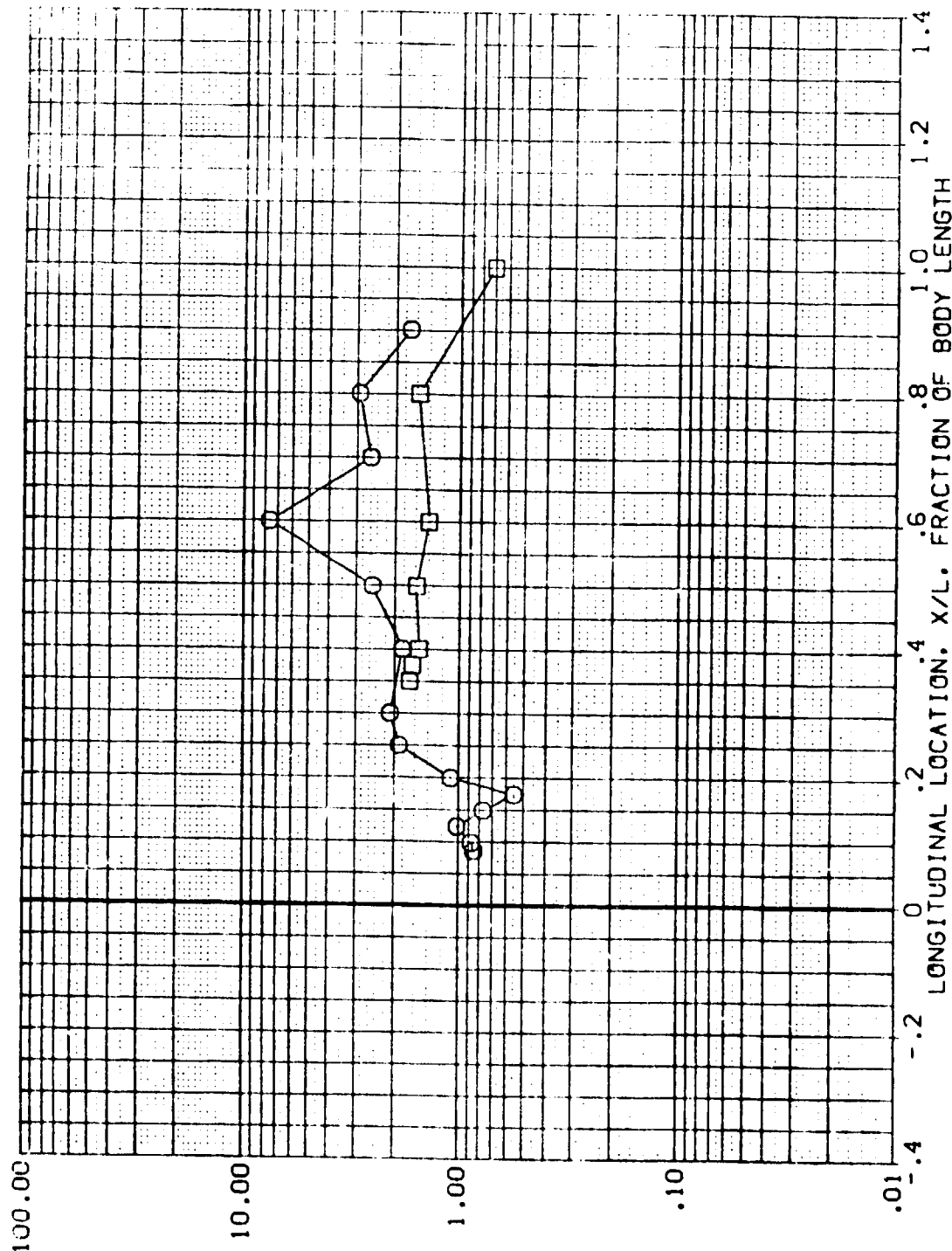


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS

IH18 B10C507W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (COMB11)

SYMBOL	Y(BP)	HAW/HT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES	
						.000	BETA
□	70.000	.900	4.728	0.0	MACH	6.000	X-HT
							.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

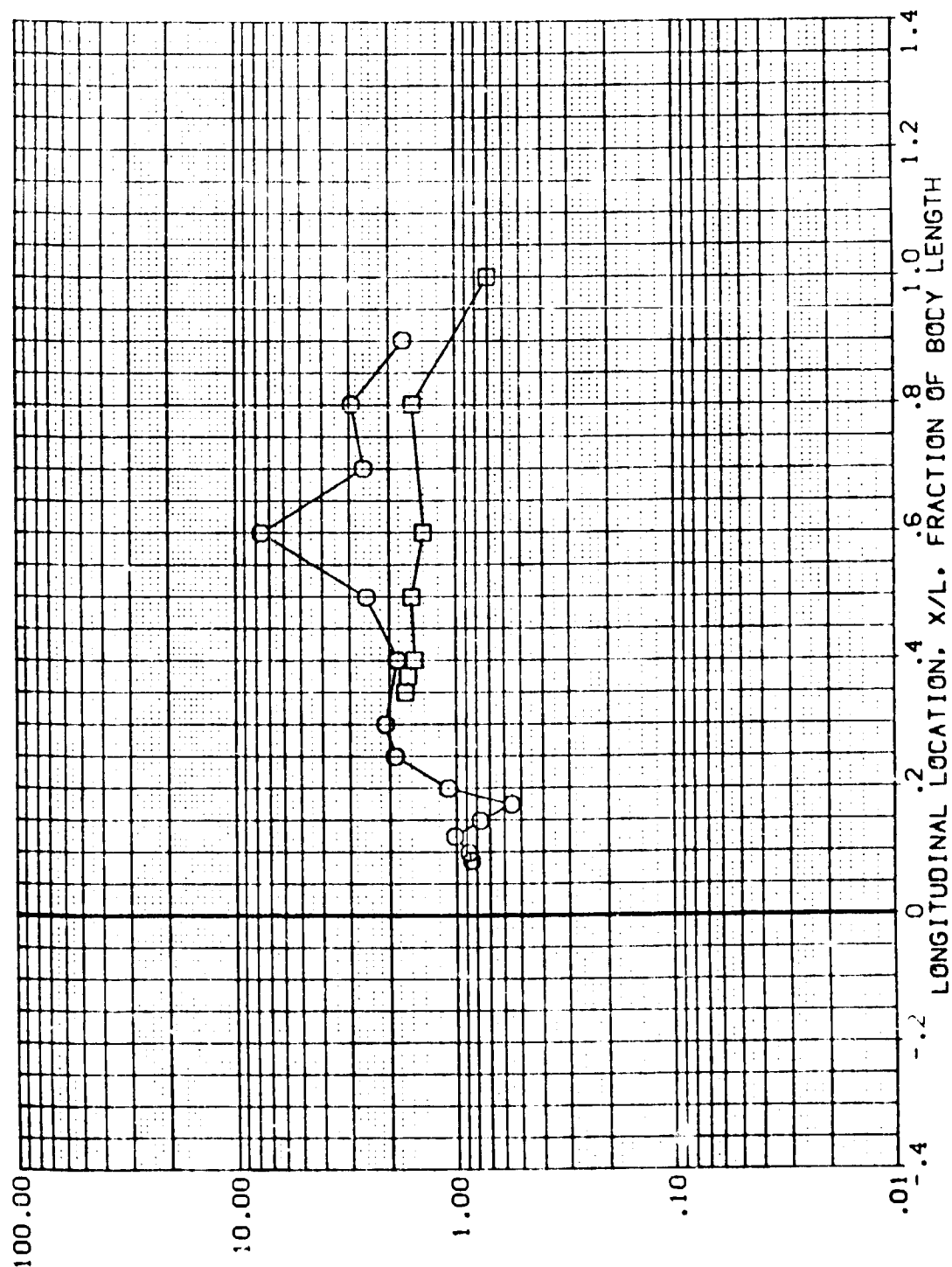


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL "RIPS"

JH18 B10C507W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (COMB11)

PARAMETRIC VALUES
 .000 BETA
 6.000 X-MT

ALPHA
 MACH

REFERENCE DATA
 0.0 .000

HAU/MT RN/L
 1.000 4.728

Y(BP)
 .000
 70.000

SYMBOL
 □

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

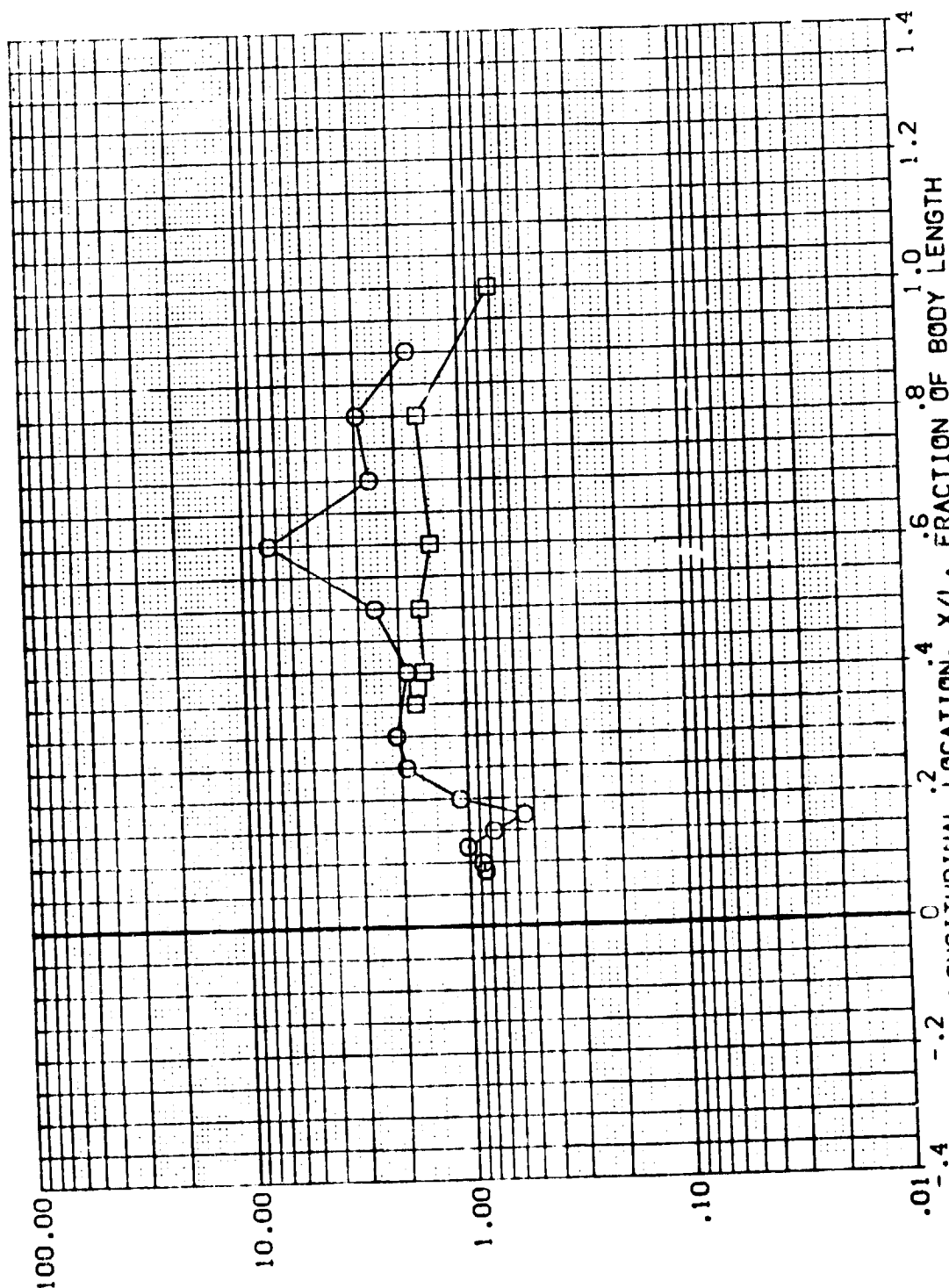


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS

IH18 B10C507W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (CQMB18)

SYMBOL
□

Y(BP)
.000
70.000

MAV/HT
.850

RM/L
4.481

REFERENCE DATA
0.0 .000

ALPHA
MACH

PARAMETRIC VALUES
-5.000 BETA
6.000 X-HT

.000
.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

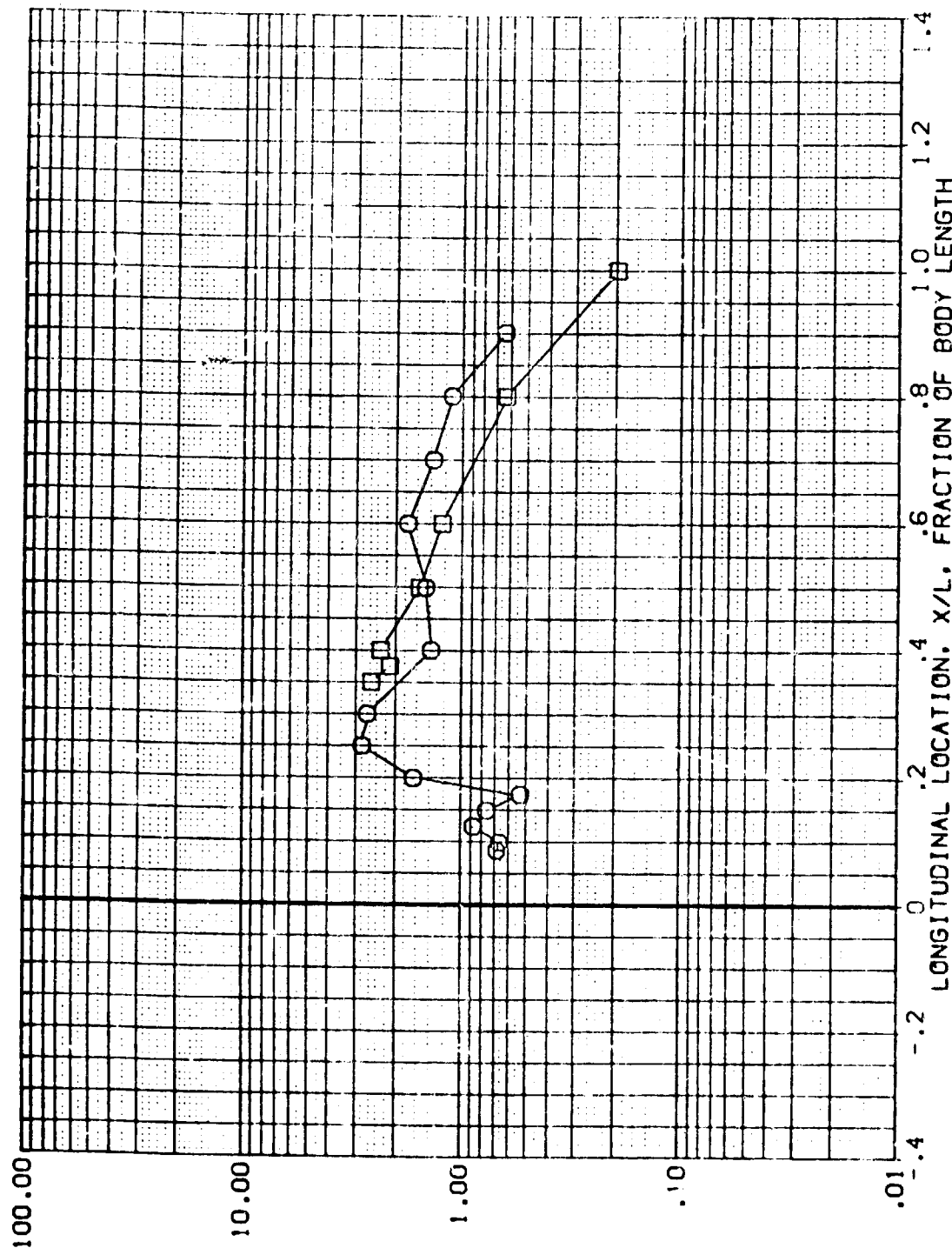


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS

1H18 B10C507W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (CQMB18)

SYMBOL	Y(BP)	HAW/HT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES
□	.000	.900	4.481	0.3	MACH	-5.000 BETA
○	70.000			.000		6.000 X-HT
						.003
						.03

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

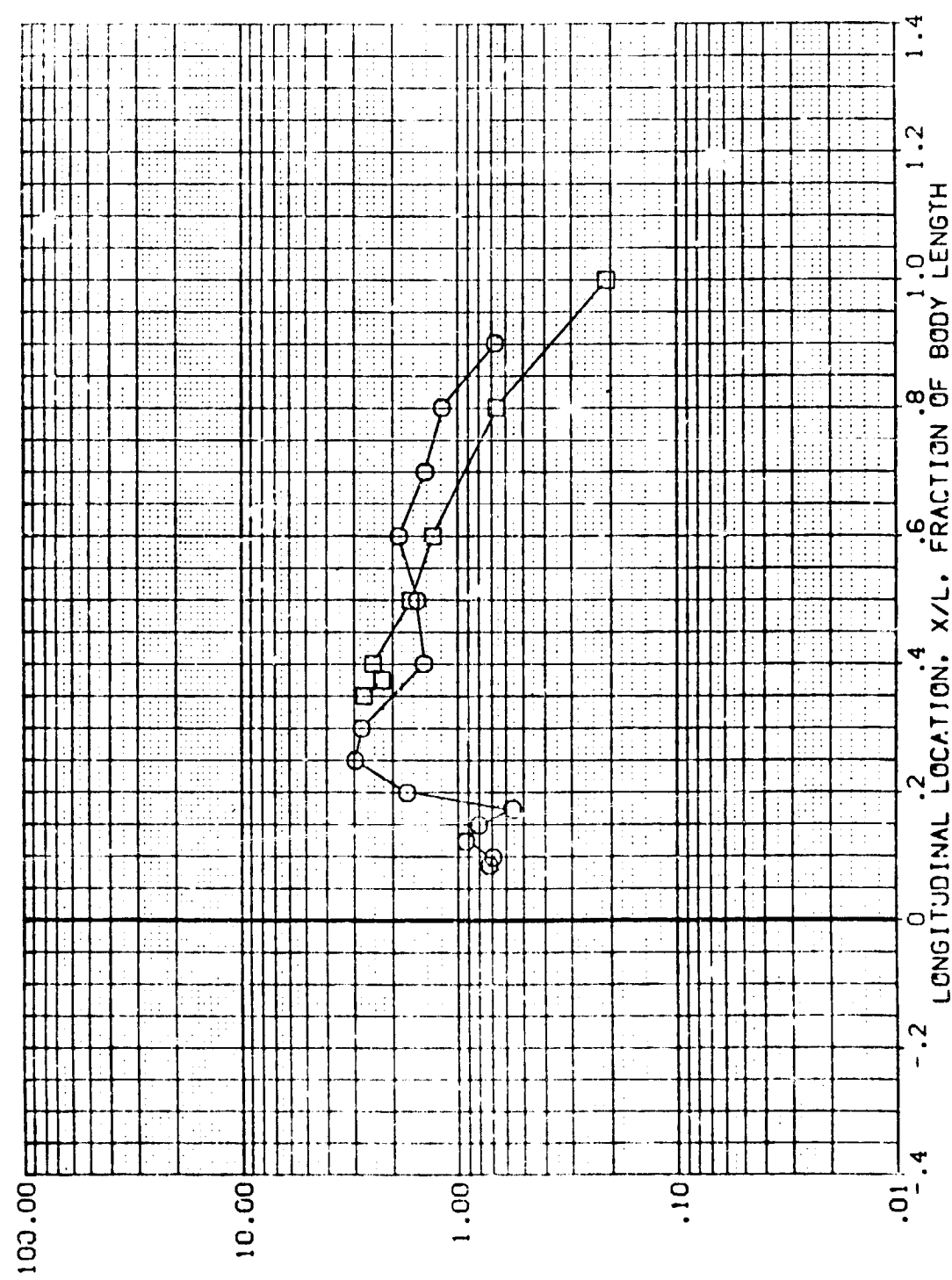


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS

IH18 B10C5D7W87M3F4V5X26 BODY (T8 ON)/(T8 OFF) (COMB18)

SYMBOL
□

Y(BP)
.000
70.000

MAW/HT
1.000

RN/L
4.481

REFERENCE DATA
0.0 .000

ALPHA
MACH

PARAMETRIC VALUES
-5.000 BETA
5.000 X-HT

.000
.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

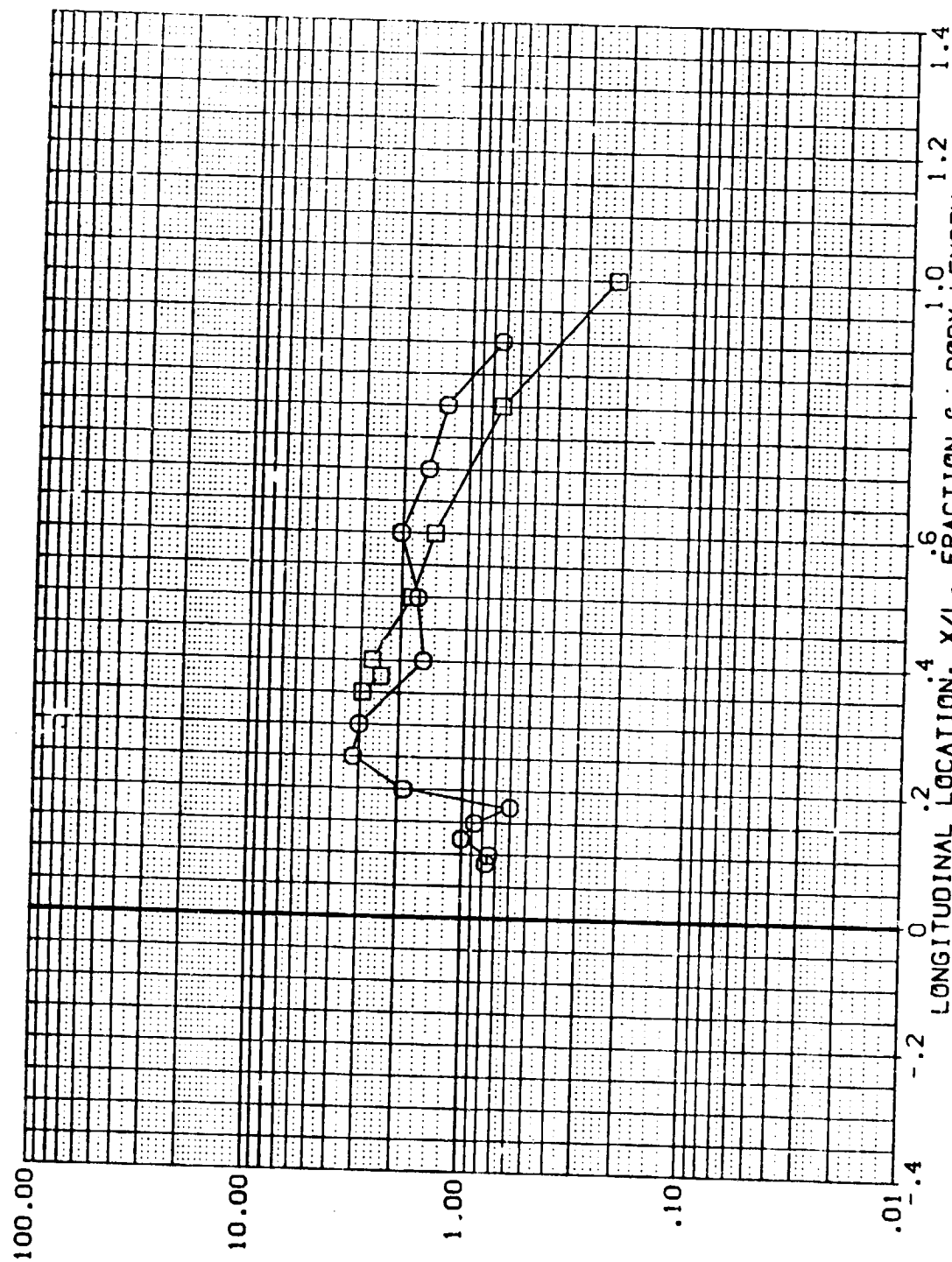


FIG 25 INTERFERENCE EFFECTS ON ORBITER BODY DATA - SMALL TRIPS

1H18 B10C5D7W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) (COMW01)

SYMBOL	2T/B	HAW/HIT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES
□	.400	.850	4.778	0.0	MACH	.000 BETA
◇	.600			.000		6.000
◇	.800					

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

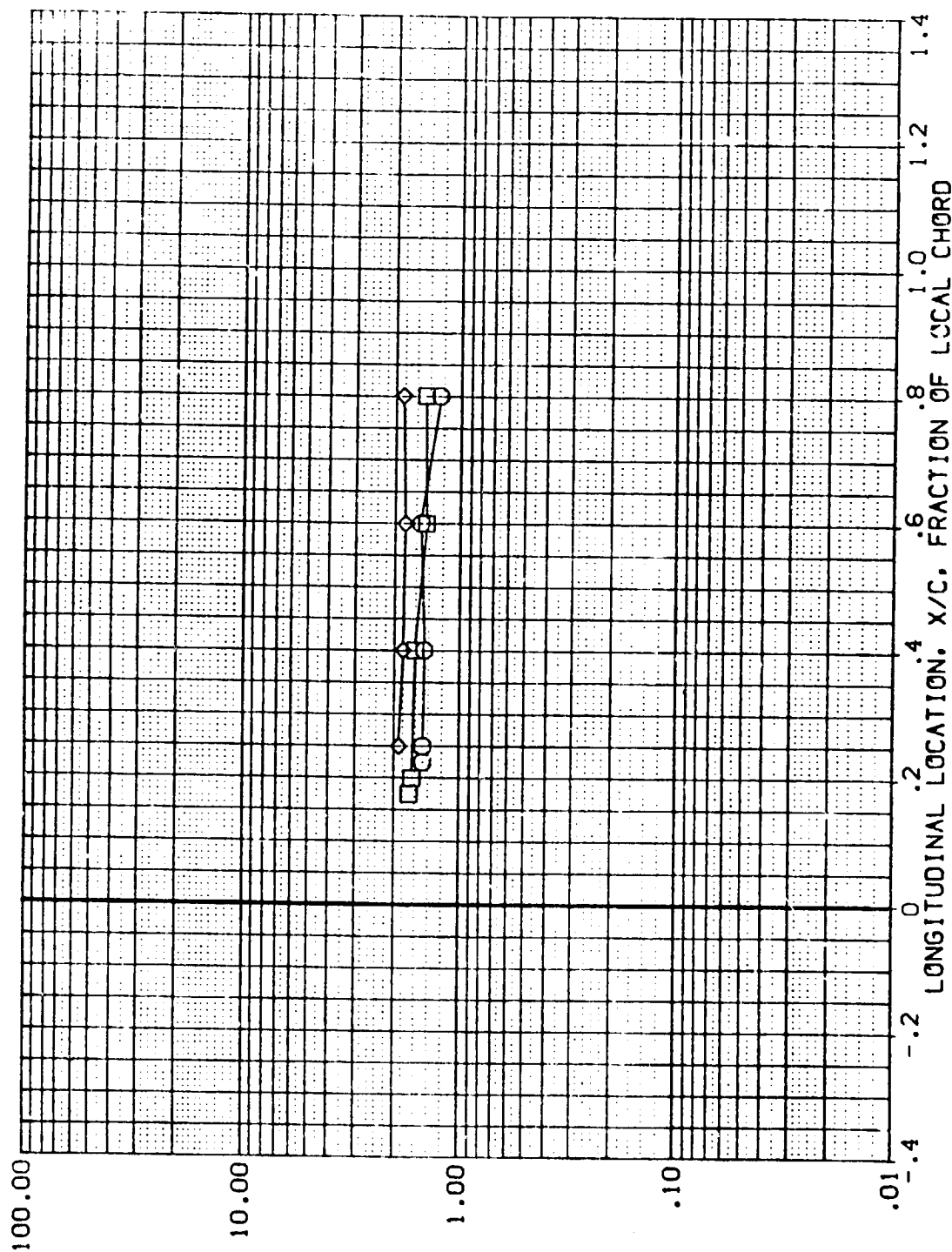


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 ORB WING (T8 ON)/(1.8 OFF) (COMW01)

PARAMETRIC VALUES
 .000 BETA
 .000

ALPHA
 MACH

REFERENCE DATA
 0.0 .000

MAW/M² RN/L
 .900 4.778

2V/B
 .400
 .600
 .800

SYMBOL
 ◇ □ ○

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

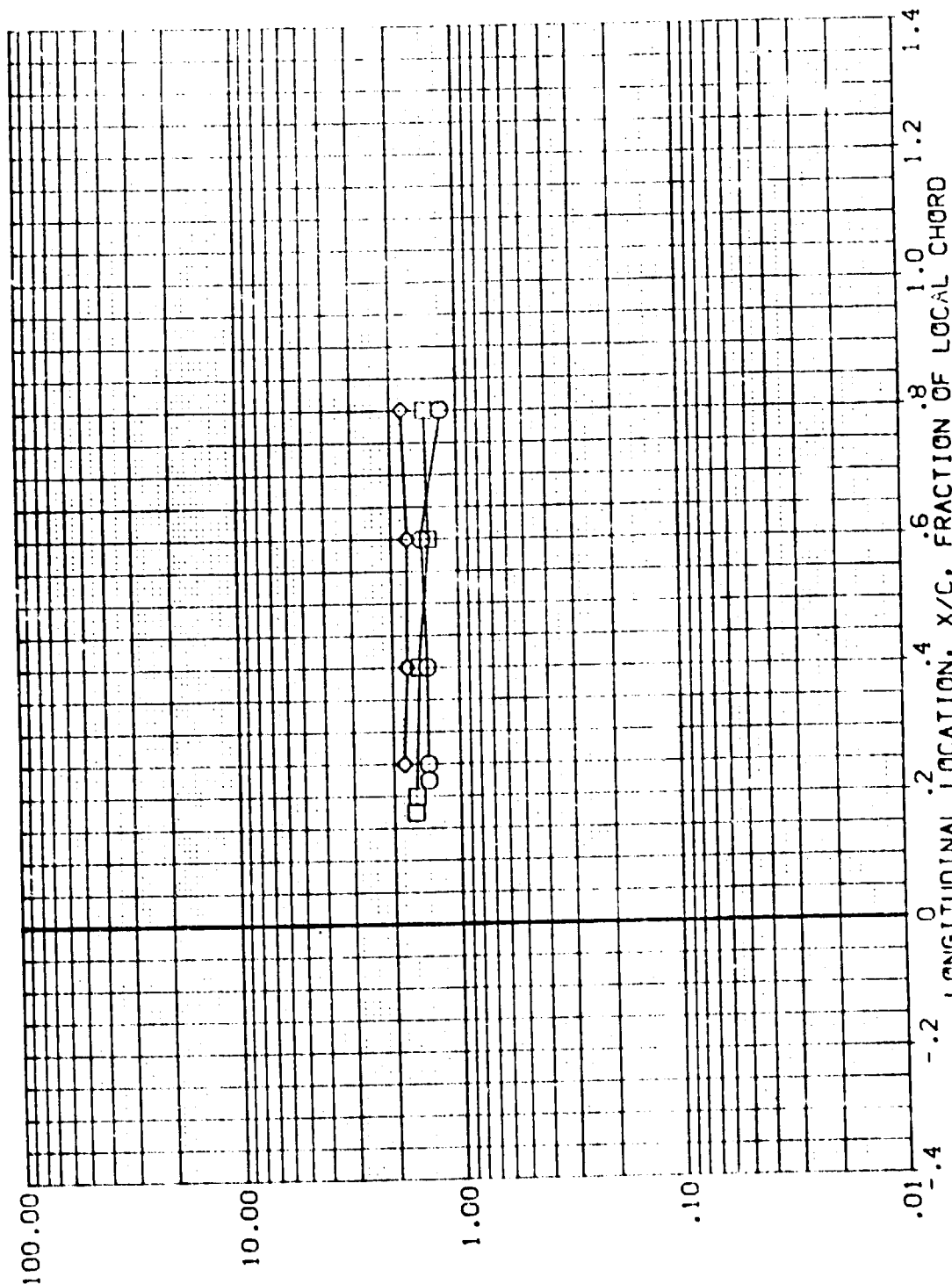


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

1H18 B10C5D7W87M3F4V5 ORB WING (18 ON)/(18 OFF) (COMW01)

51480	21/B	HA/W	HA/L	HA/W	HA/L	HA/W	HA/L
	.400	1.000	4.778	0.0	.000	ALPHA	BETA
	.600					WACH	5.000
	.800						

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

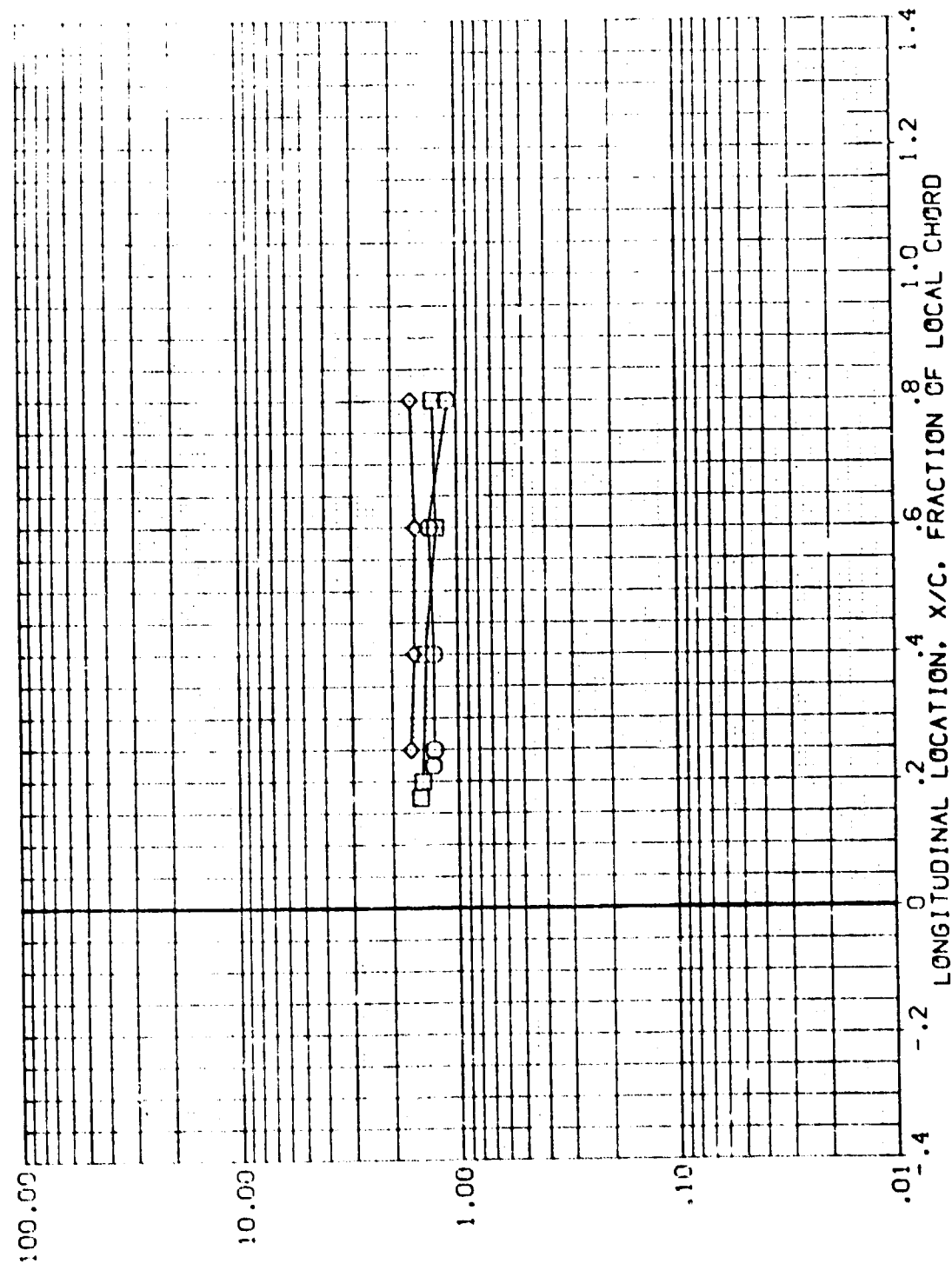


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

IH18 B10C507W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) (COMW04)

SYMBOL	2Y/B	MAW/MT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES
◇	.400	.850	4.923	0.0	MACH	-5.000 BETA
□	.600			.000		6.000
◇	.800					.000

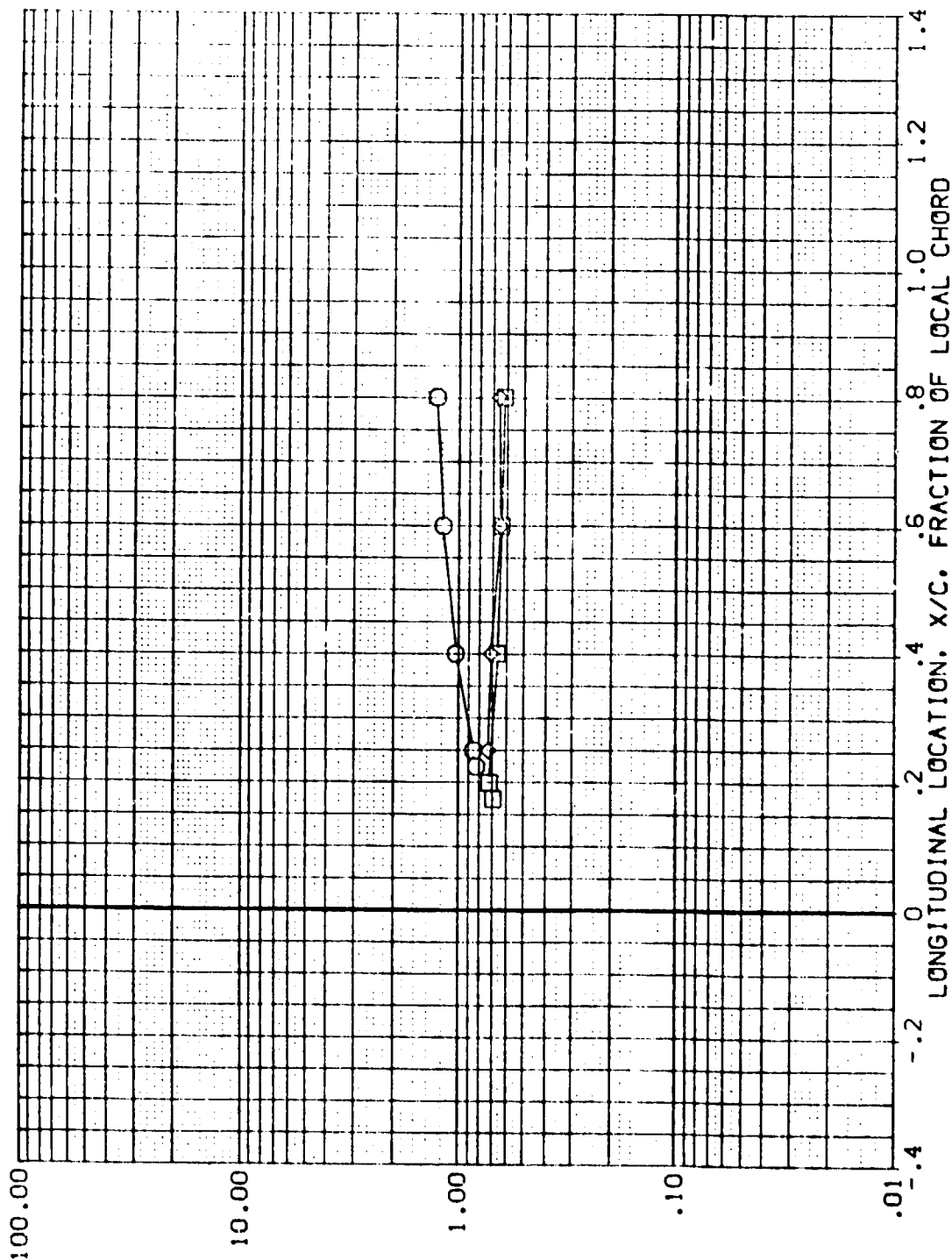


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

1H18 B10C507W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) (COMW04)

PARAMETRIC VALUES

BETA

-5.000

ALPHA

MACH

REFERENCE DATA

0.0

RN/L

4.923

2Y/B

.400

.600

.800

SYMBOL

◇

□

○

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

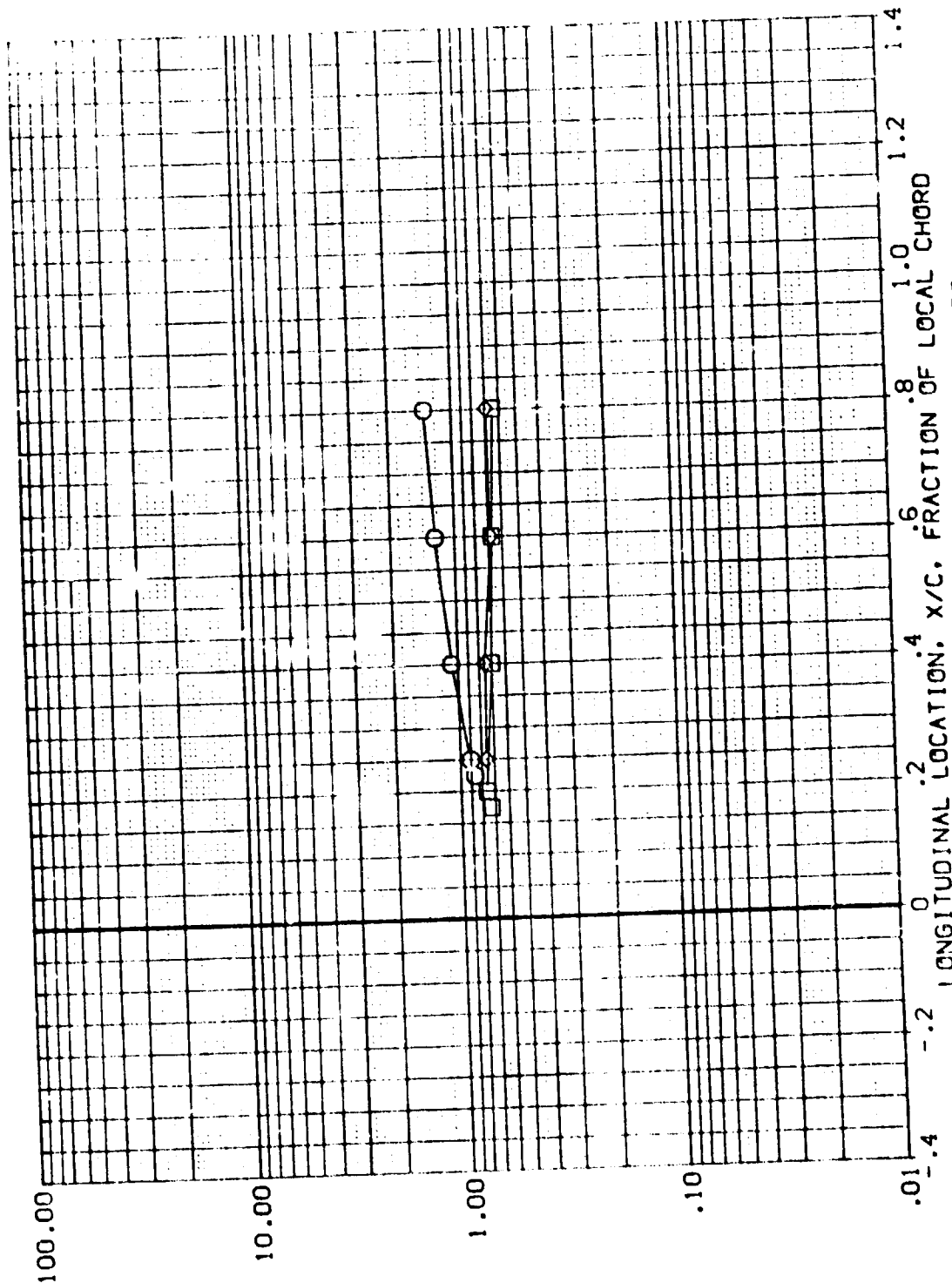


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

IHI8 B10C507W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) (CQMWO4)

SINGOL	2V/8	HAB/HT	RN/L	REFERENCE DATA	PARAMETRIC VALUES
◇	.400	1.000	4.923	0.0	ALPHA
◇	.600			.000	MACH
◇	.800				BETA

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

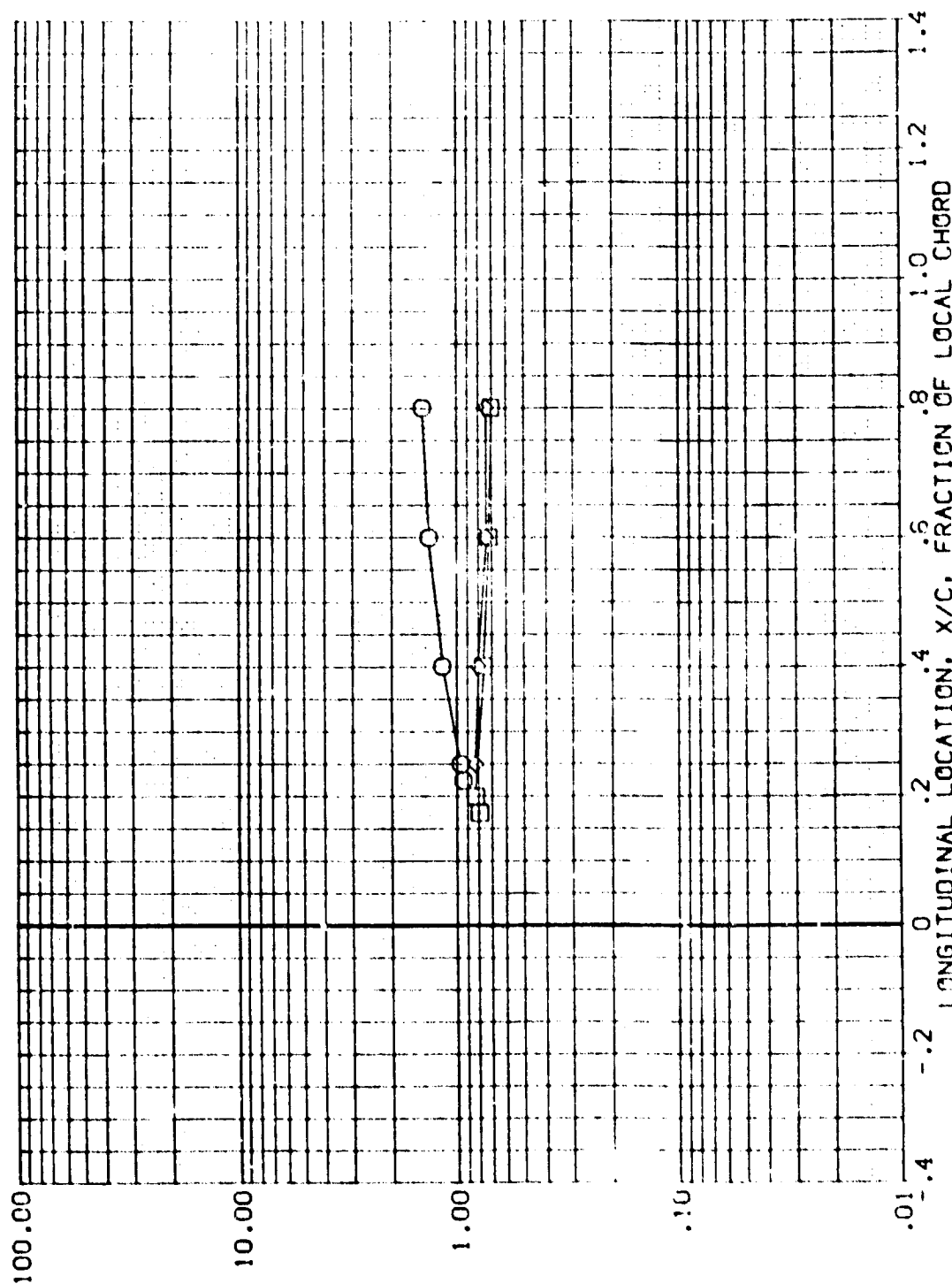


FIG 26 INTERFERENCE EFFECTS ON ORBITER WING DATA - NO TRIPS

118 B10C507W18M3F4V5X26 WING (T8 ON)/(T8 OFF) (COMW11)

SYMBOL
 ◇ □

21/B
 .400
 .600
 .800

HAW/HT
 .850

RN/L
 4.728

REFERENCE DATA
 0.0 .000

ALPHA
 MACH

PARAMETRIC VALUES
 .000 .000
 .000 .000
 6.000 X-HT

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

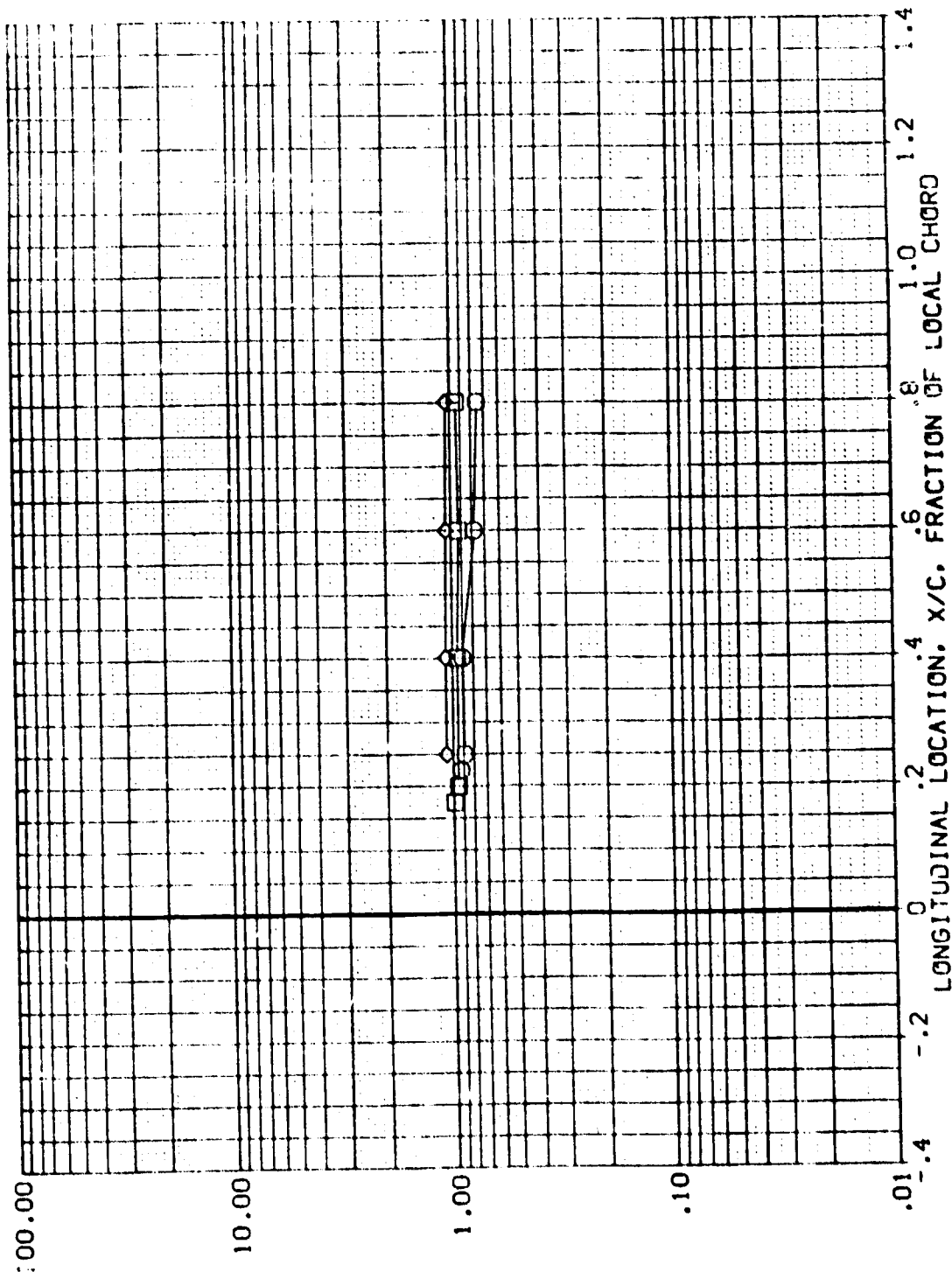


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

IH18 B10C507W18M3F4V5X26 WING (T8 ON)/(T8 OFF) (COMW11)

PARAMETRIC VALUES
 .000 BETA
 .03: X-HT

ALPHA
 MACH

REFERENCE DATA
 0.0 .000

MAW/HT .900
 RN/L 4.728

2Y/B
 .400
 .500
 .600

SYMBOL
 □
 ◇

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

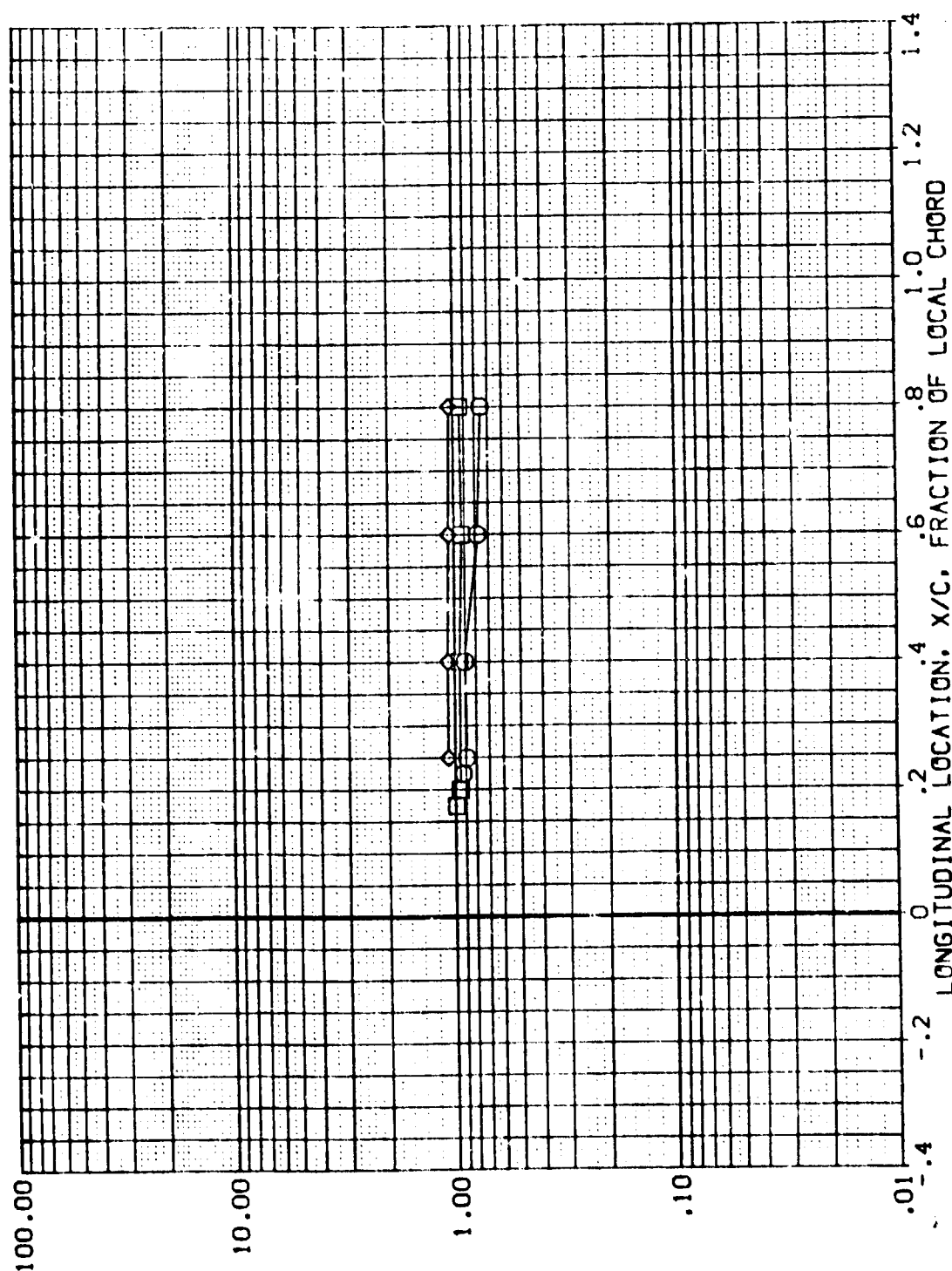


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

1H18 B10C5D7W18M3F4V5X26 WING (T8 ON)/(T8 OFF) (COMW11)

SYMBOL
 ○
 □
 ◇

2Y/B
 .400
 .600
 .800

HAW/HT
 1.000

RN/L
 4.728

REFERENCE DATA
 0.0 .000

ALPHA
 MACH

PARAMETRIC VALUES
 .000 .000
 6.000 X-HT

.000
 .031

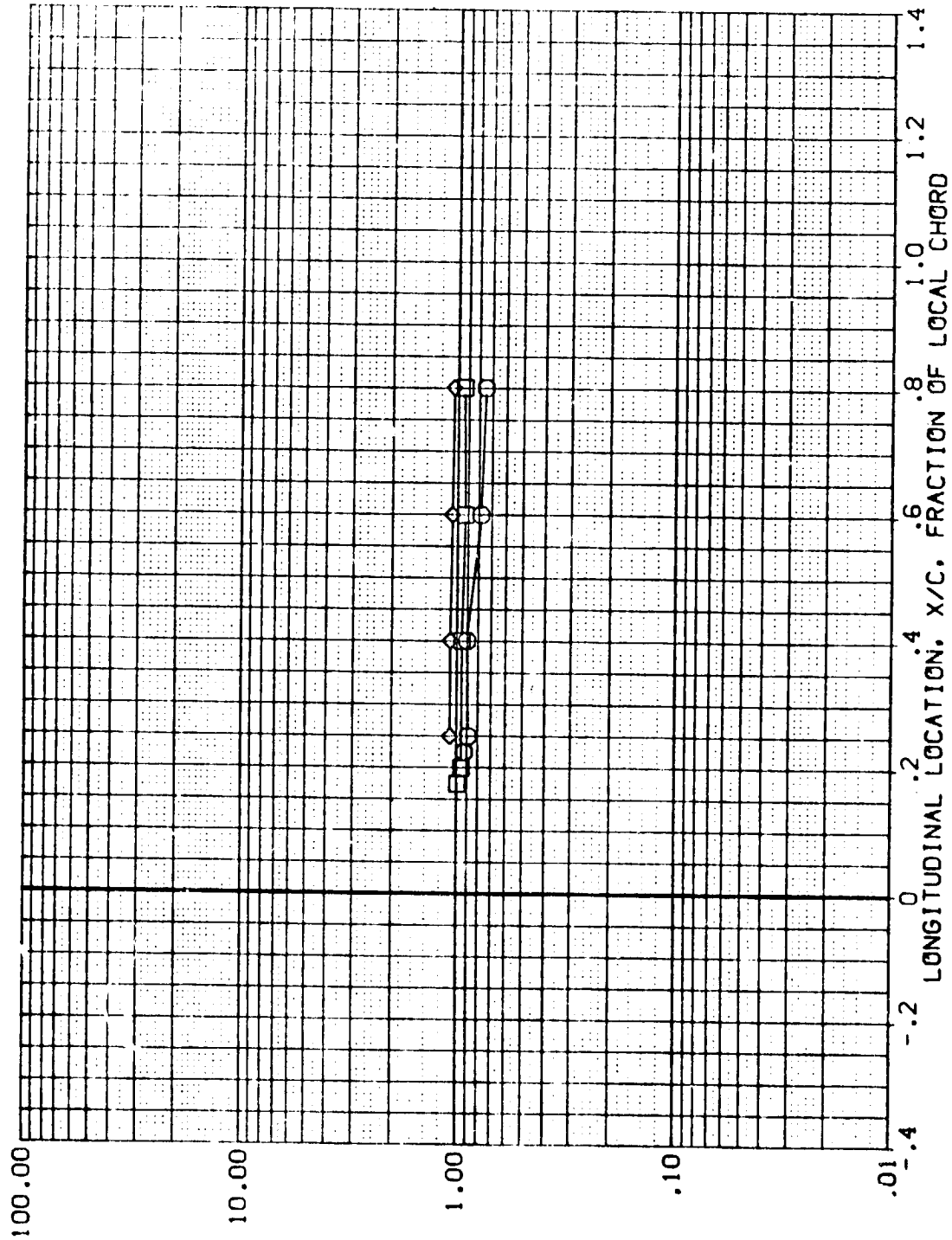


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

1H18 B10C507W18M3F4V5X26 WING (T8 ON)/(T8 OFF) (COMW18)

SYMBOL	2Y/B	HAW/HT	RN/L	REFERENCE DATA		PARAMETRIC VALUES		
				0.0	.000	ALPHA	BETA	X-HT
◇	.400	.850	4.491			MACH		
□	.600						6.000	
◇	.800							.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

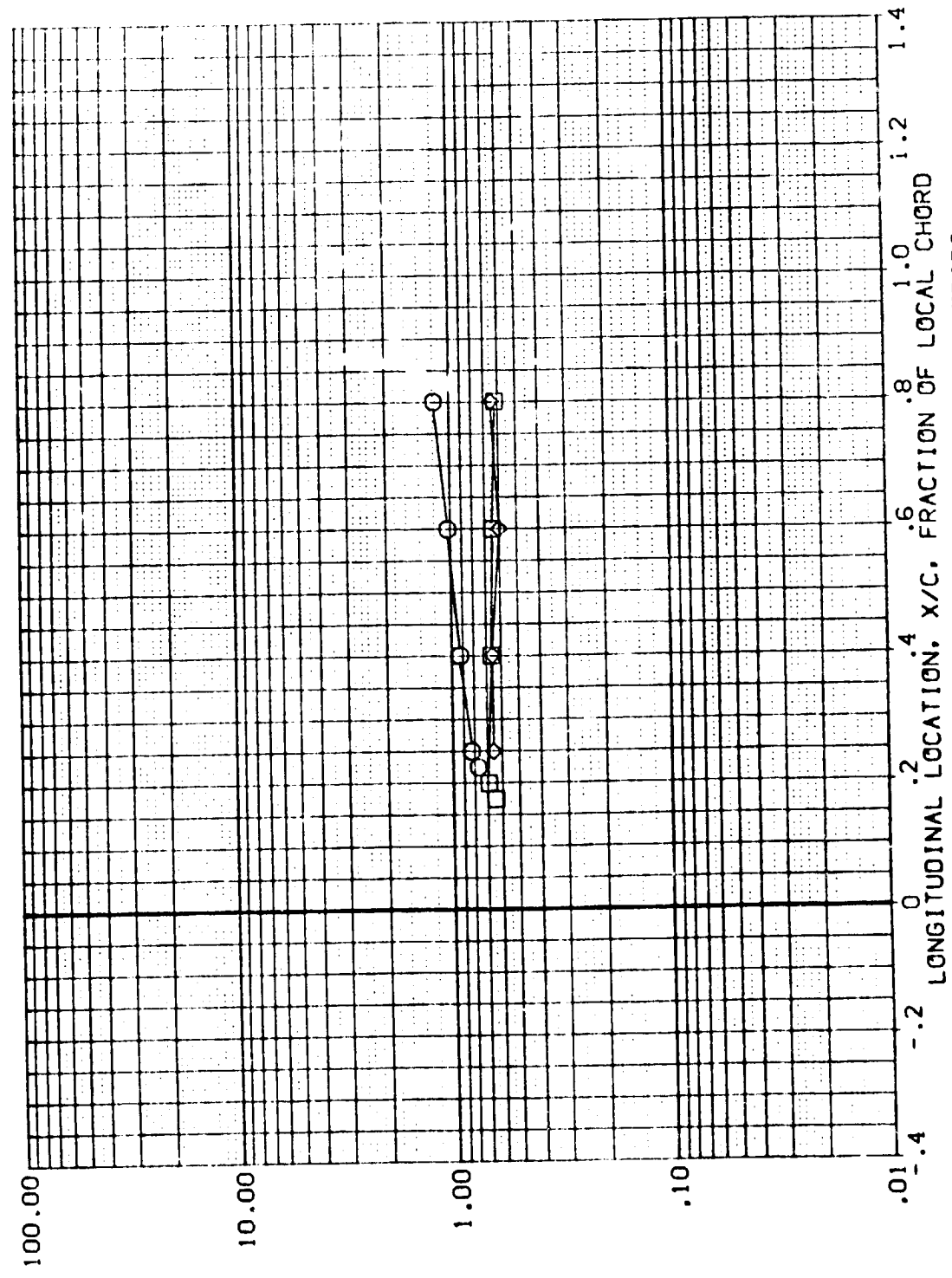


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

IH18 B10C507W18M3F4V5X26 WING (18 ON)/(18 OFF) (COMW18)

PARAMETRIC VALUES
 -5.000 BETA
 5.000 X-HT
 .000
 .031

REFERENCE DATA
 0.0

HAW/HT RN/L
 .900 4.481

SYMBOL 2Y/B
 .400
 .600
 .800

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

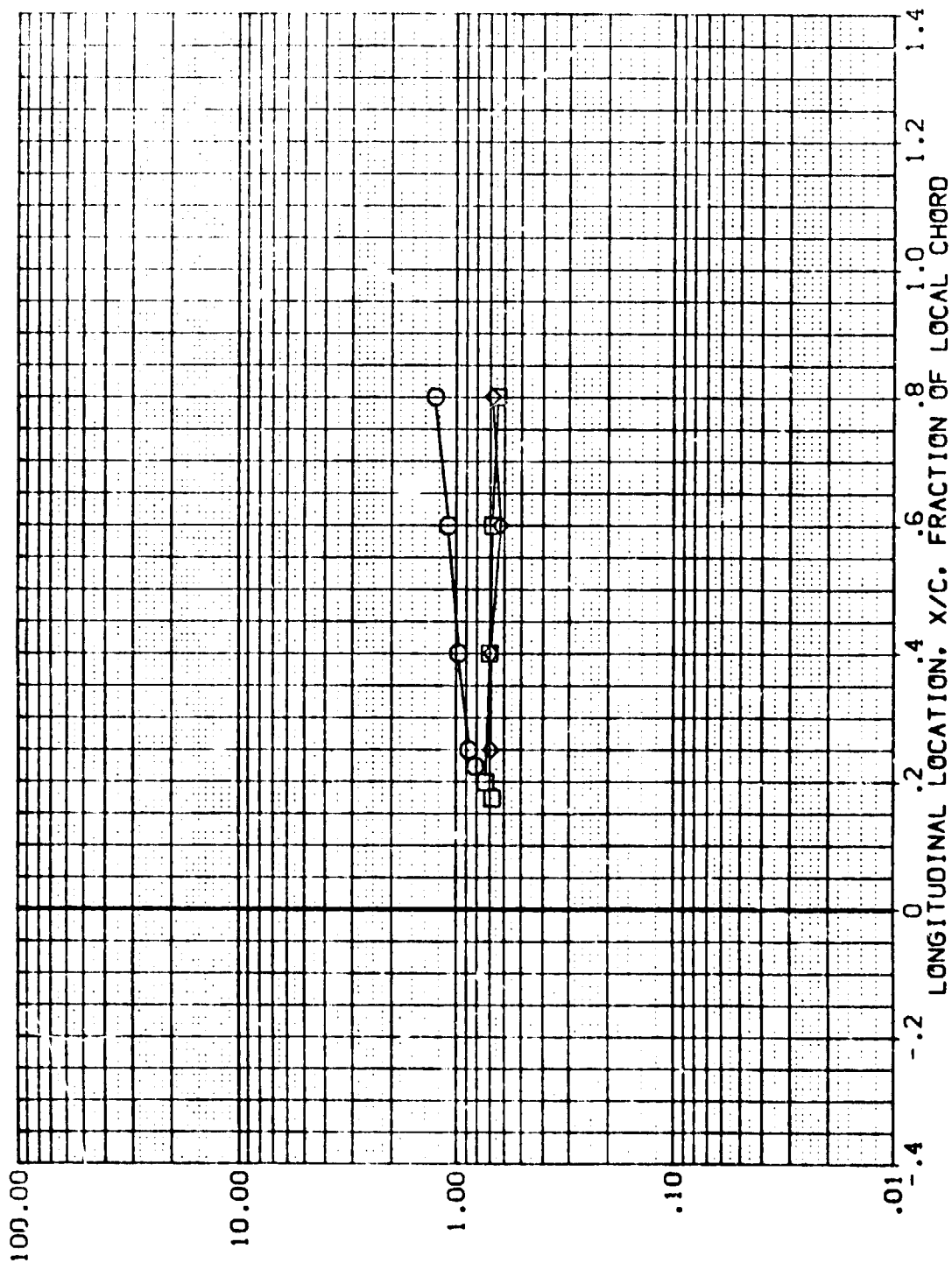


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

IH18 B10CJ07W18M3F4V5X26 WING (T8 ON)/(T8 OFF) (CGMW18)

SYMBOL

2Y/B

HAW/HT

RN/L

REFERENCE DATA

ALPHA

MACH

PARAMETRIC VALUES

BETA

X-HT

.000

.031

.000

.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

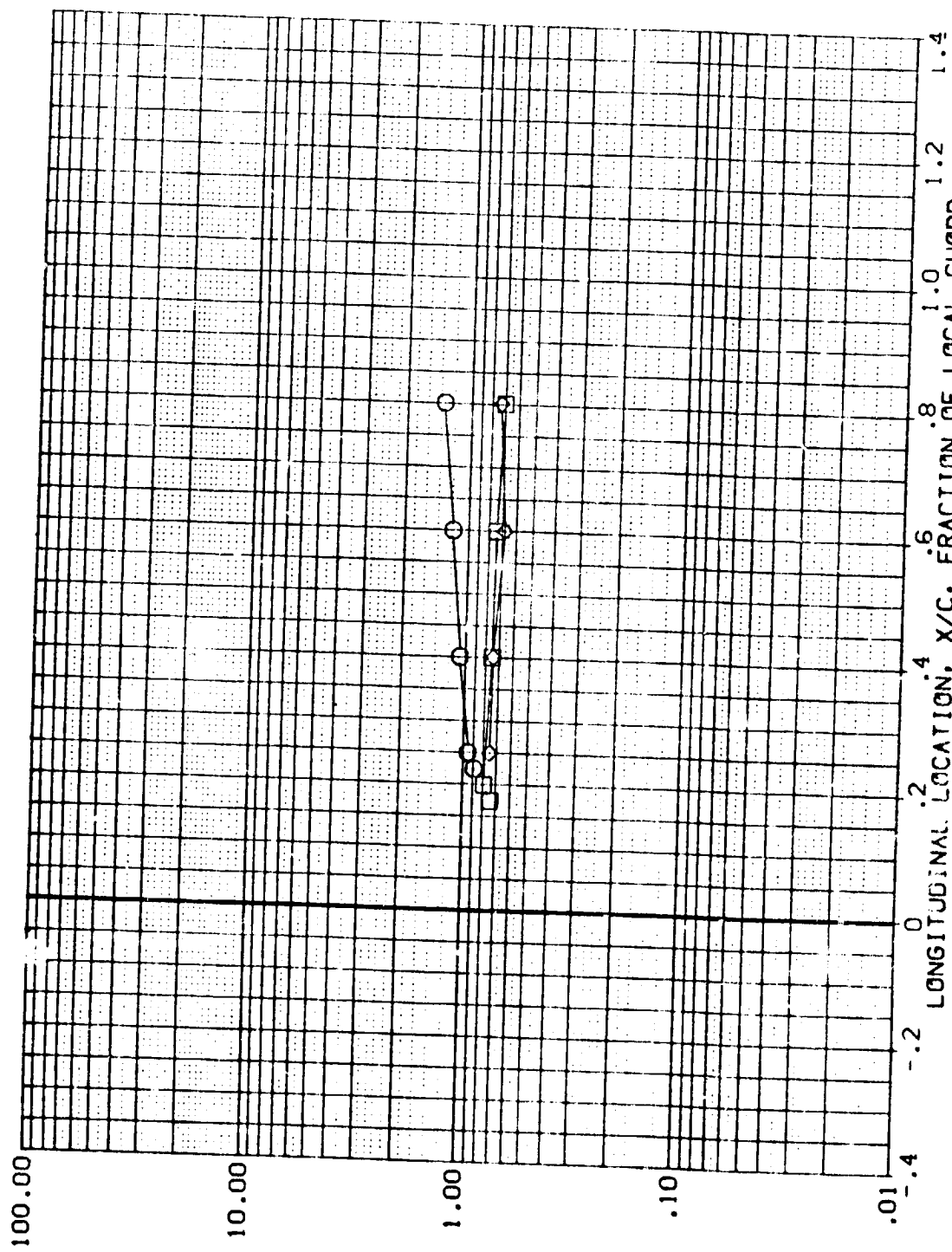


FIG 27 INTERFERENCE EFFECTS ON ORBITER WING DATA - SMALL TRIPS

PH18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (CGMT02)

SYMBOL PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

HAW/HI RN/L
 .850 4.807

REFERENCE DATA
 0.0 .000

PARAMETRIC VALUES
 .000 BETA
 6.000 MACH

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

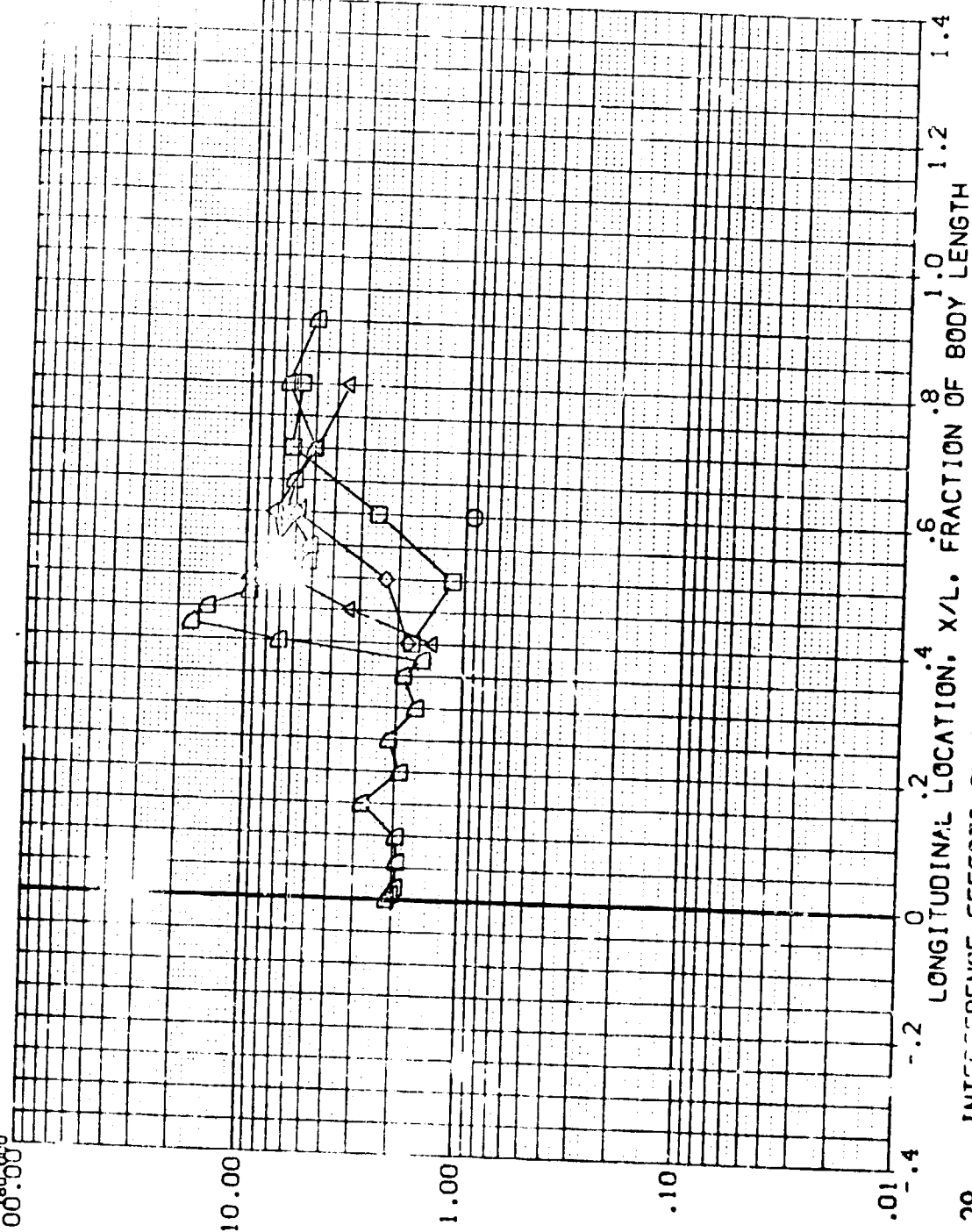


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET -- NO TRIPS

IH18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (CQMT02)

PARAMETRIC VALUES
 .000 BETA .000
 6.000 ALPHA MACH

REFERENCE DATA
 0.0 .000

HAW/HT .900 RN/L 4.907

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 ▽
 ◊
 ◻
 ◻
 ◻
 ◻

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

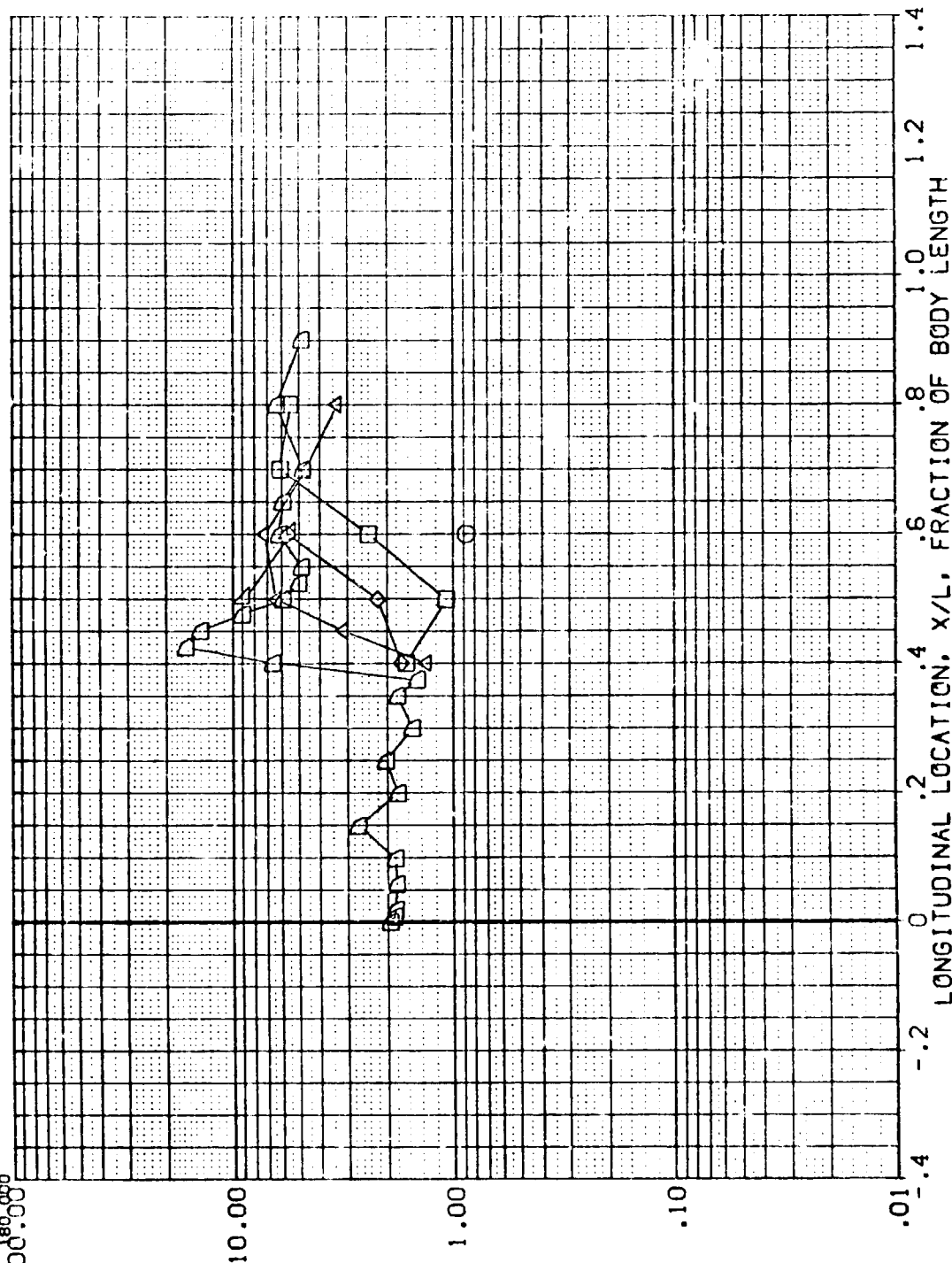


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS

IH18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (COMT02)

PARAMETRIC VALUES
 ALPHA: .000
 BETA: .000
 PACH: 6.000

REFERENCE DATA
 0.0

MAW/HT 1.000
 RN/L 4.807

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 ○
 □
 ◇
 △
 ▼

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

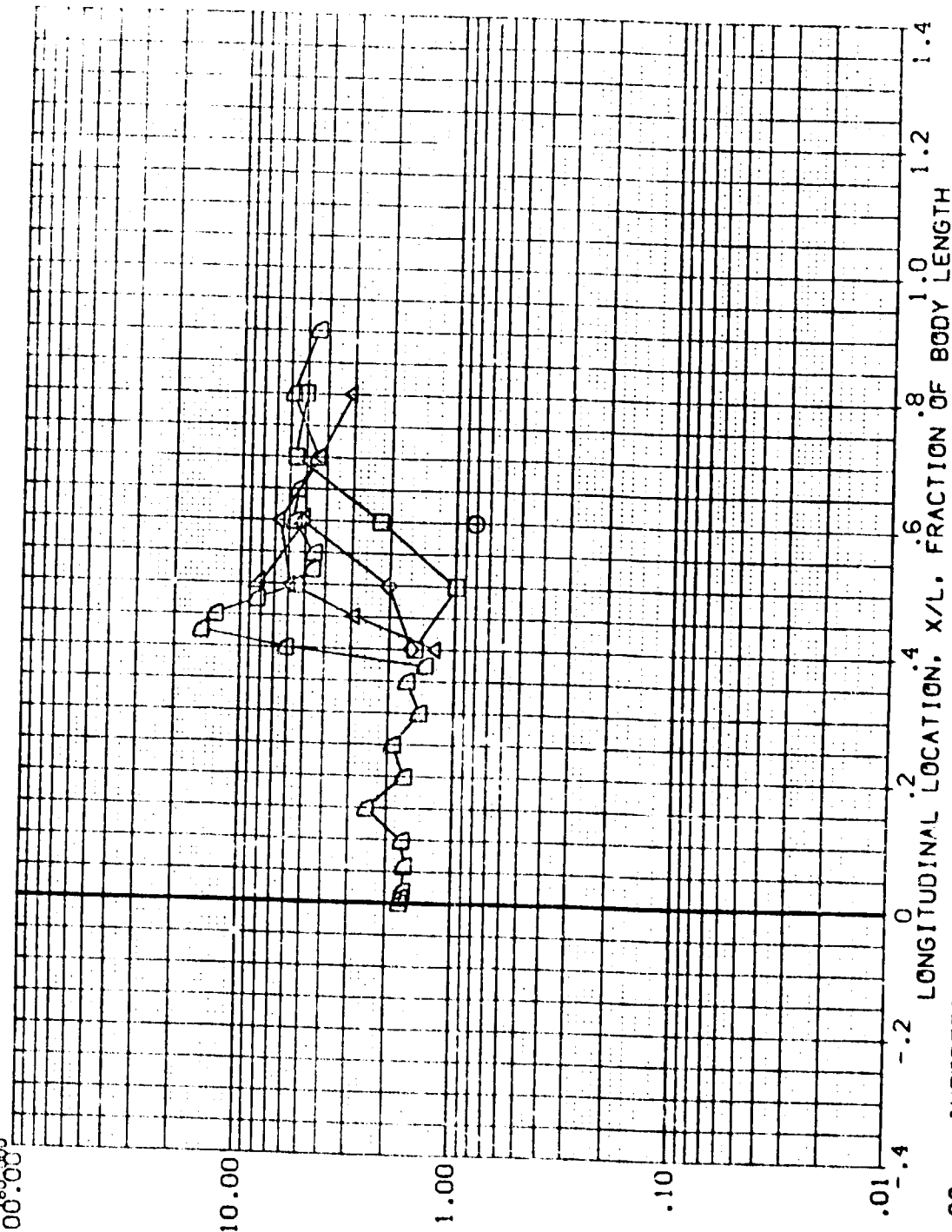


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS

IH18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (CQMT03)

SYMBOL
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

HAW/HT
 .850

RN/L
 4.908

REFERENCE DATA
 0.0 .000

PARAMETRIC VALUES
 ALPHA
 MACH
 -5.000
 6.000
 BETA
 .000

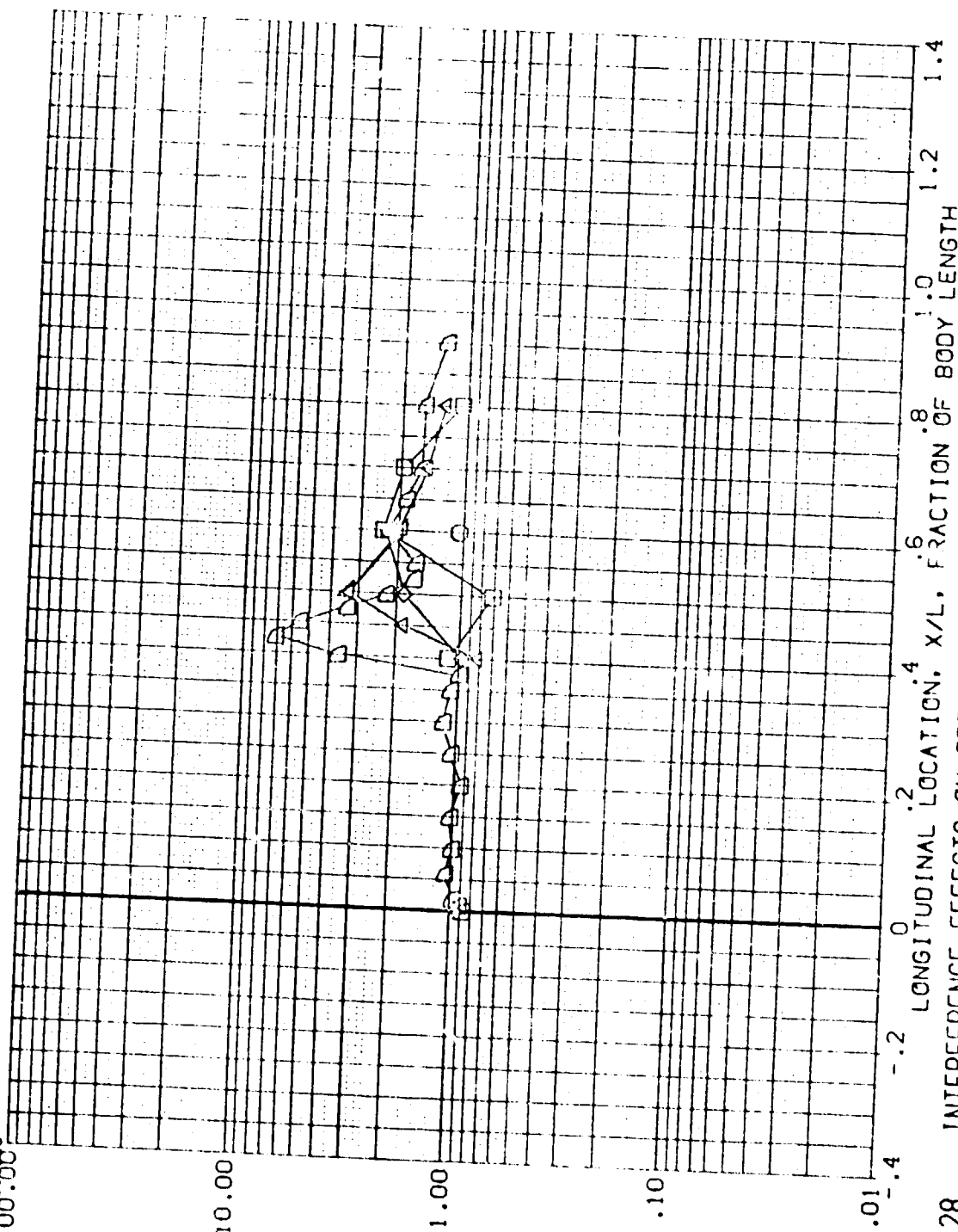


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF. h_i/h_u

0.01
0.1
1.0
10.0

PHI
67.500
90.000
112.500
135.000
157.500
180.000

HAIR/MT .900 RN/L 4.500

REFERENCE DATA
0.0 .000

PARAMETRIC VALUES
ALPHA
MACH
-5.000
5.000
0.000

PHI 18 T8 TANK (IND/OUT OF) PRESENCE OF ORBITER (COMT03)

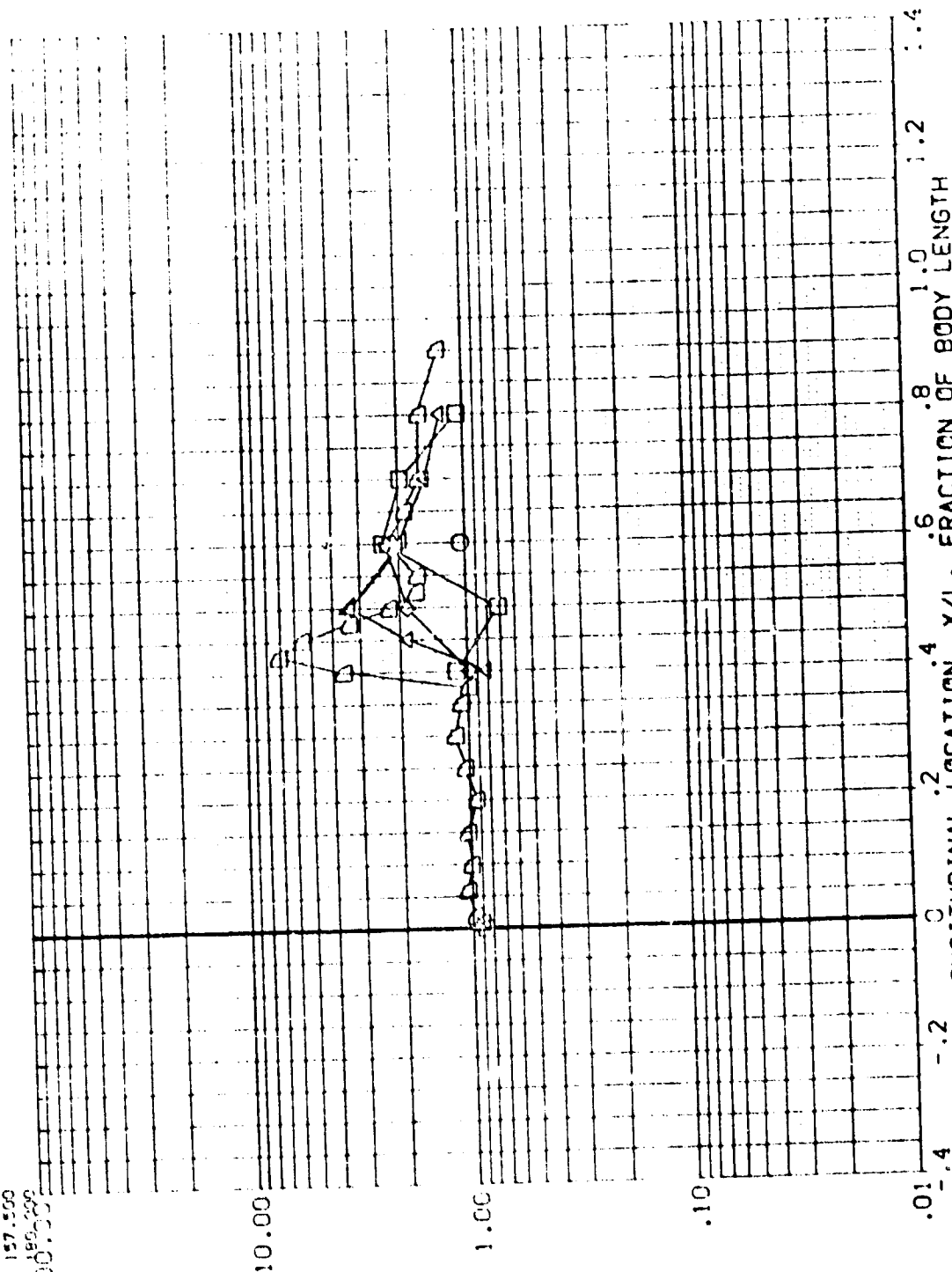


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS

IH18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (CQMT03)

SYMBOL PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

HAW/HT RN/L
 1.000 4.908

REFERENCE DATA
 0.0 .000

PARAMETRIC VALUES
 ALPHA MACH
 -5.000 6.000
 BETA .000

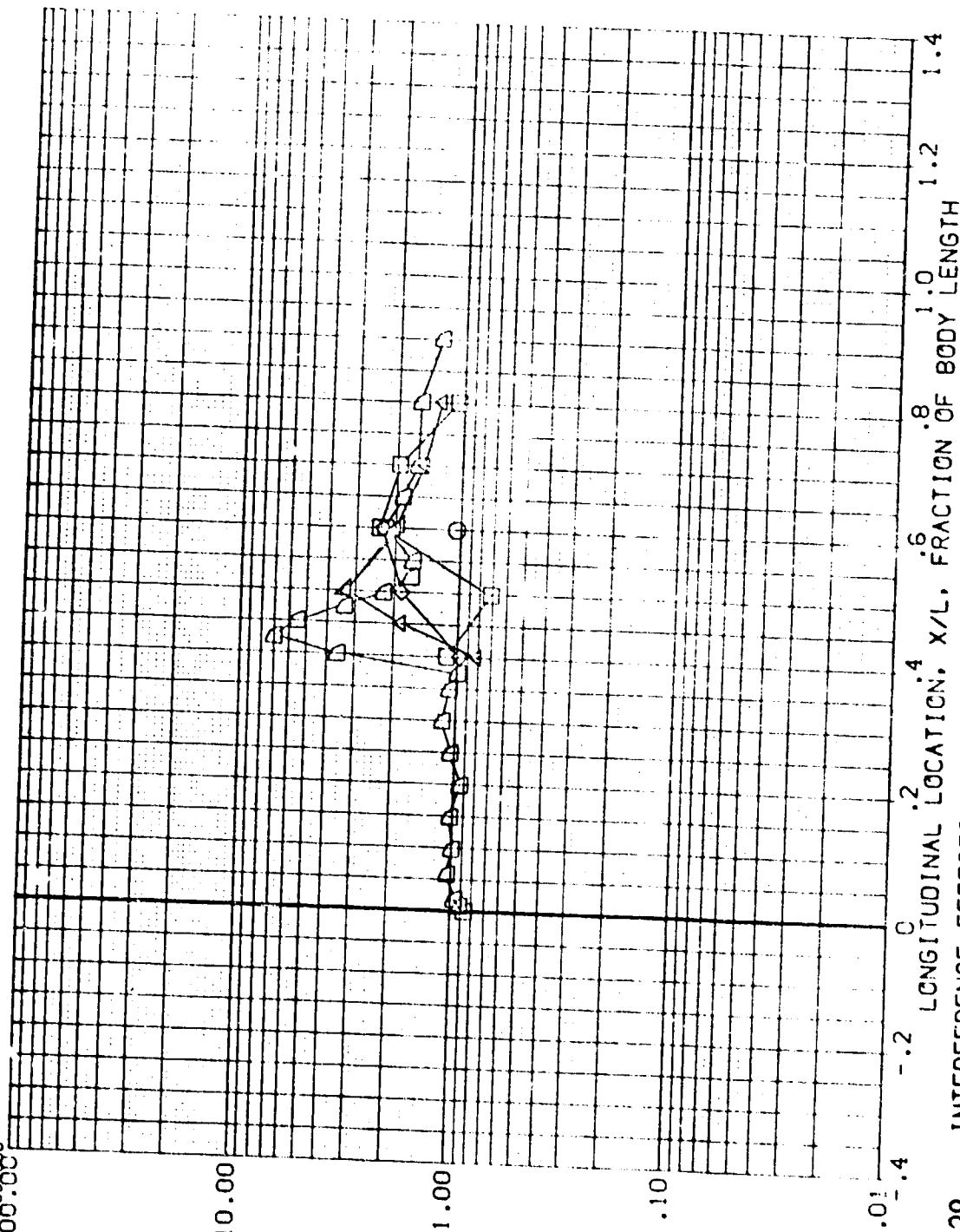


FIG 28 INTERFERENCE EFFECTS ON ORBITER ET - NO TRIPS

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

1418 18426 TANK (IN)/(OUT OF) PRESENCE OF ORBITER (CONT12)

SYMBOL

PHI
67.500
90.000
112.500
135.000
157.500
180.000

MAW/HT
.850

RN/L
4.643

REFERENCE DATA
0.0 .000

PARAMETRIC VALUES
ALPHA
BETA
GAMMA
6.000 6.000 6.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

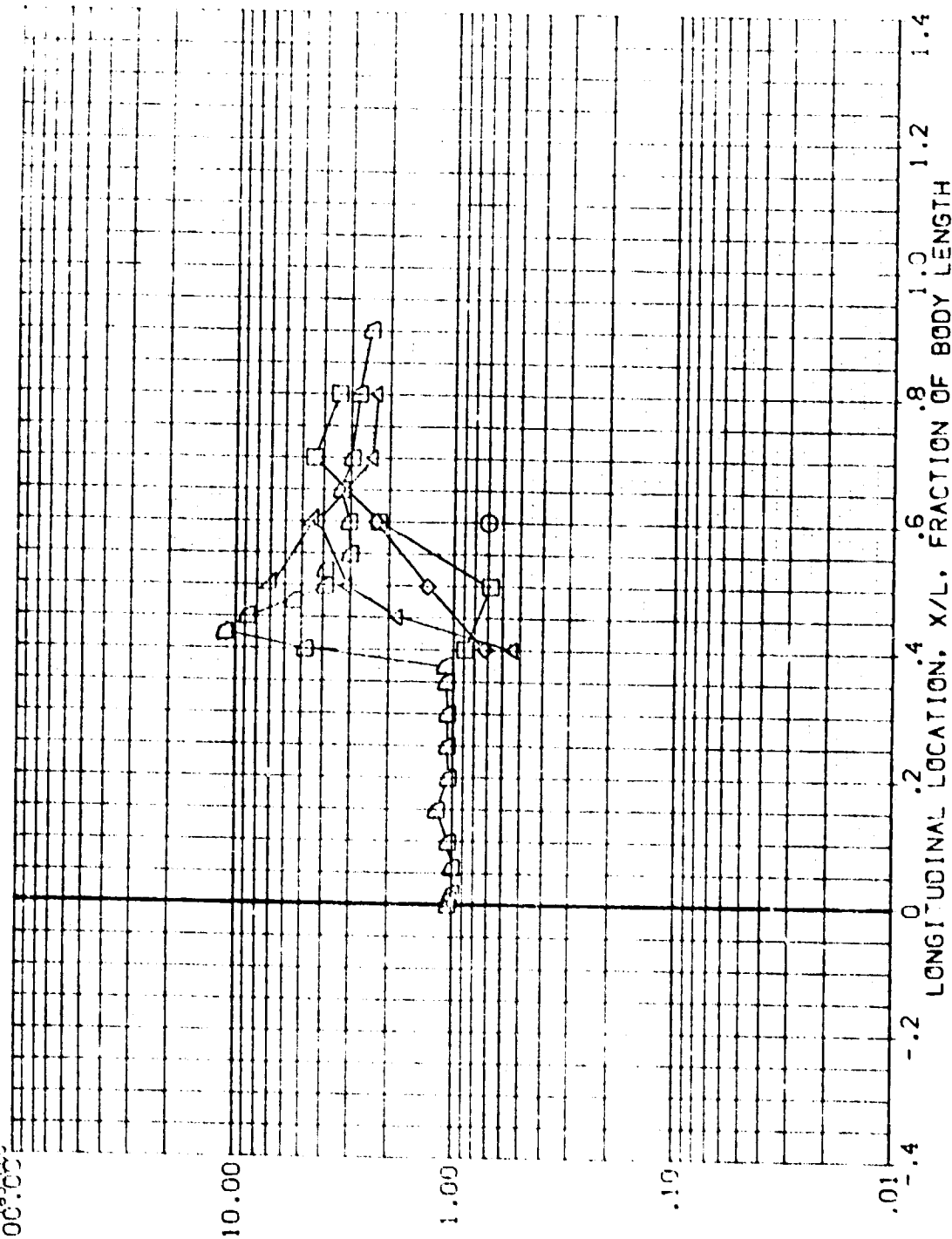


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

1418 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR(COMT12)

PARAMETRIC VALUES
 .000 BETA
 .000 X-WT

ALPHA
 MACH

REFERENCE DATA
 0.0

MAW/HT
 .900

RN/L
 4.643

PHI

67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 1740110
 1740111
 1740112
 1740113
 1740114
 1740115

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., H_1/H_U

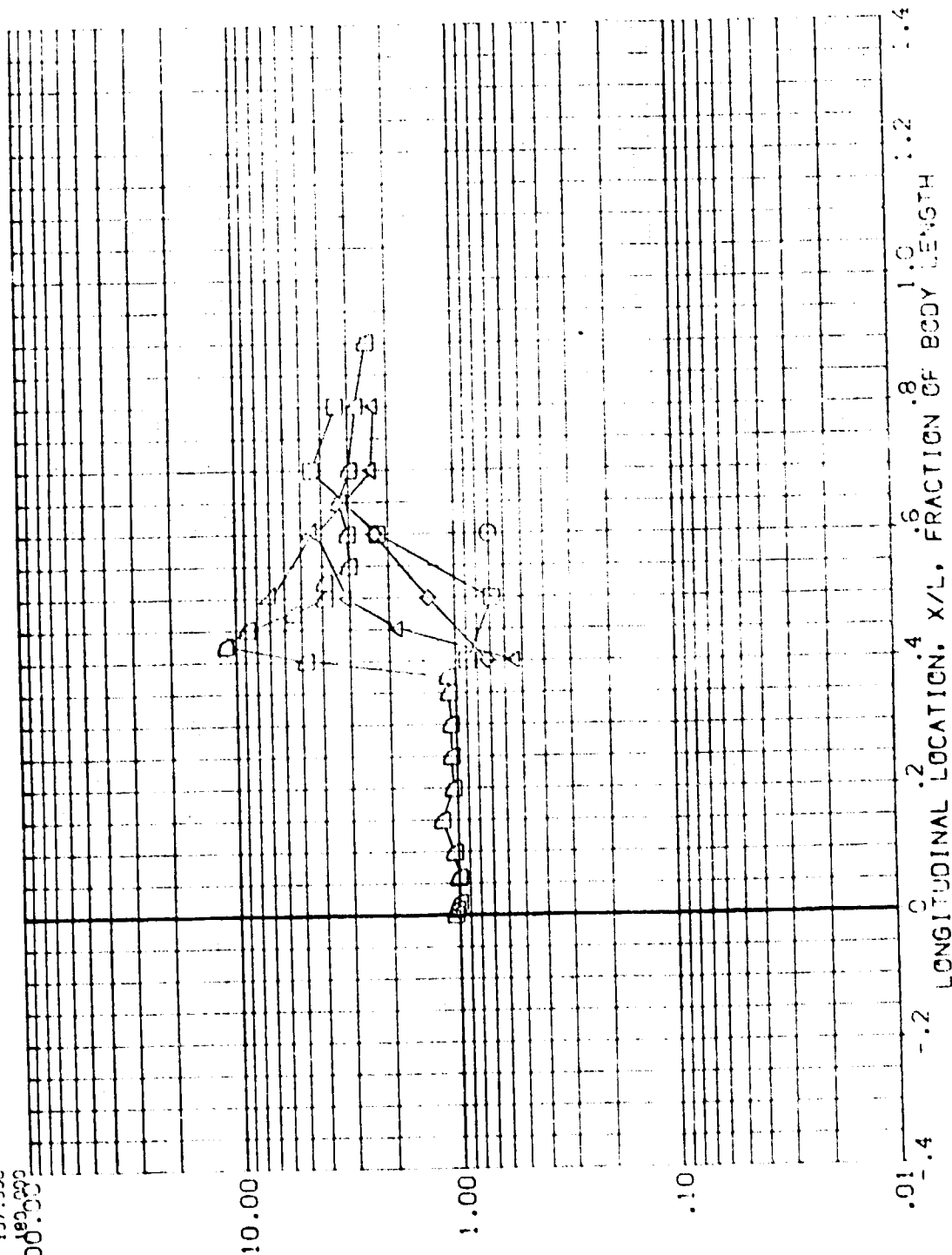


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

PARAMETRIC VALUES
 .000 BETA
 .000 X-HT
 6.000

ALPHA
 MACH

REFERENCE DATA
 0.0

HAU/HT RN/L
 1.000 4.543

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 ○ □ △ ▽ ▿

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

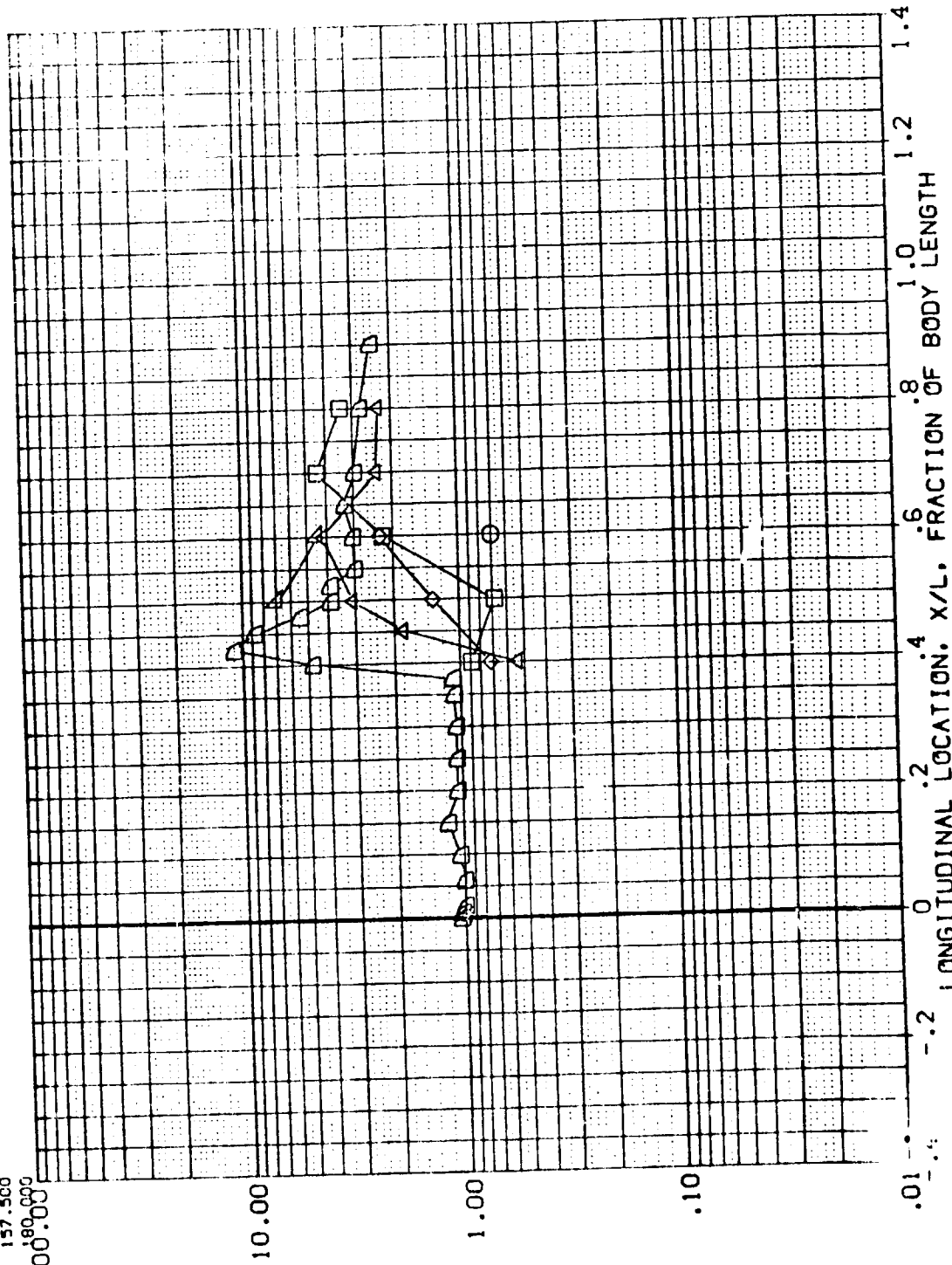


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL

IH18 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR(CQMT19)

SYMBOL	PHI	HAW/HT	RN/L	REFERENCE DATA	ALPHA	PARAMETRIC VALUES
	67.500	.850	4.424	0.0	MACH	-5.000
	90.000			.000		6.000
	112.500					BETA
	135.000					X-HT
	157.500					
	180.000					
						.000
						.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

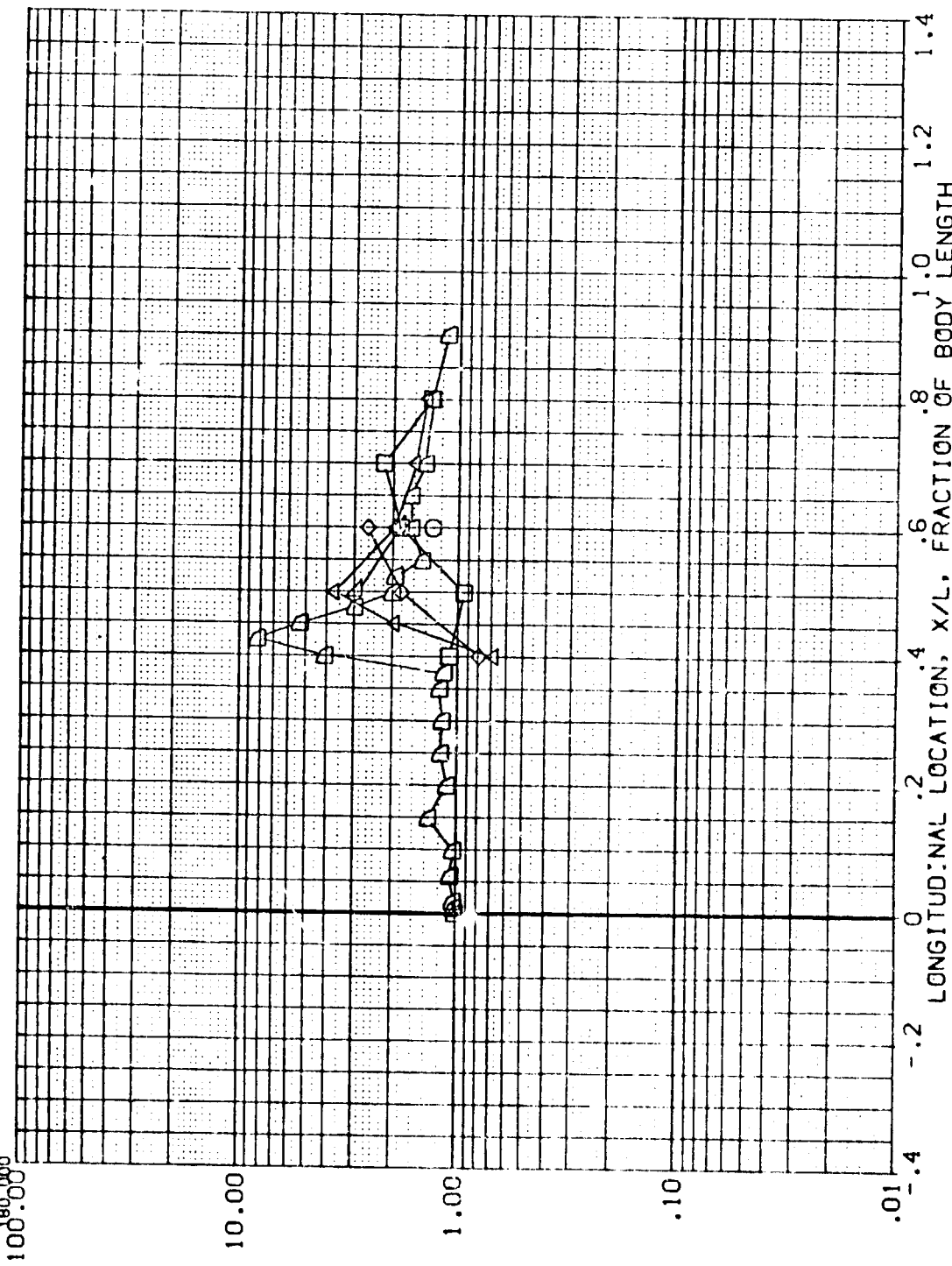


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

IH18 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITER(COBT19)

PARAMETRIC VALUES
 -5.000 BETA
 5.000 X-17

ALPHA
 MAC-

REFERENCE DATA
 0.0 .000

HAW/HT .900
 RN/L 4.424

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL
 ○ □ ◇ △

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

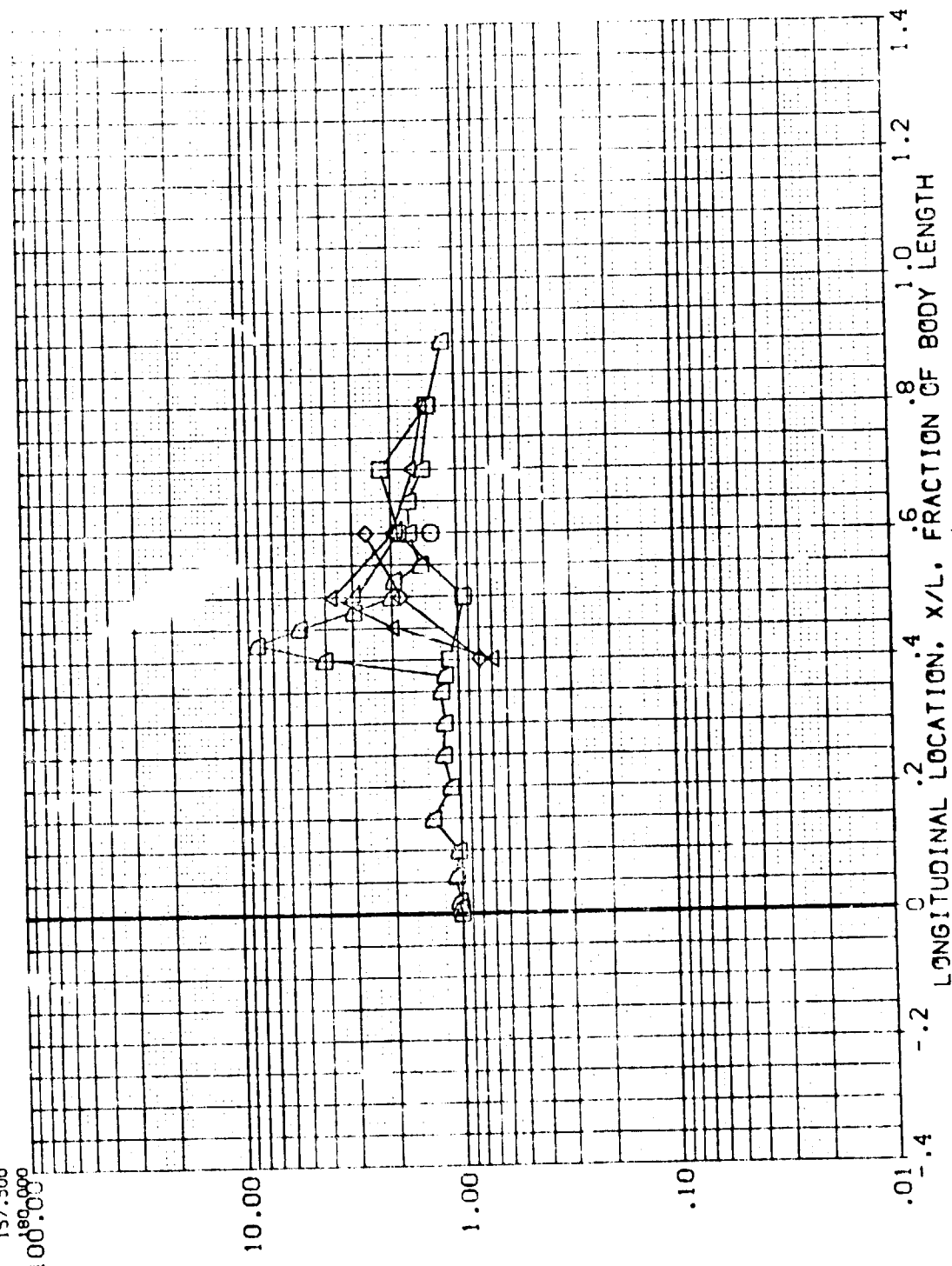


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

IH18 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR(CQMT19)

PARAMETRIC VALUES
 -5.000 BETA
 6.000 X-HT
 .000
 .031

REFERENCE DATA
 0.0

HAW/HT 1.000
 RN/L 4.424

PHI
 67.500
 90.000
 112.500
 135.000
 157.500
 180.000

SYMBOL

□ ◇ △ ▽ ▽

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

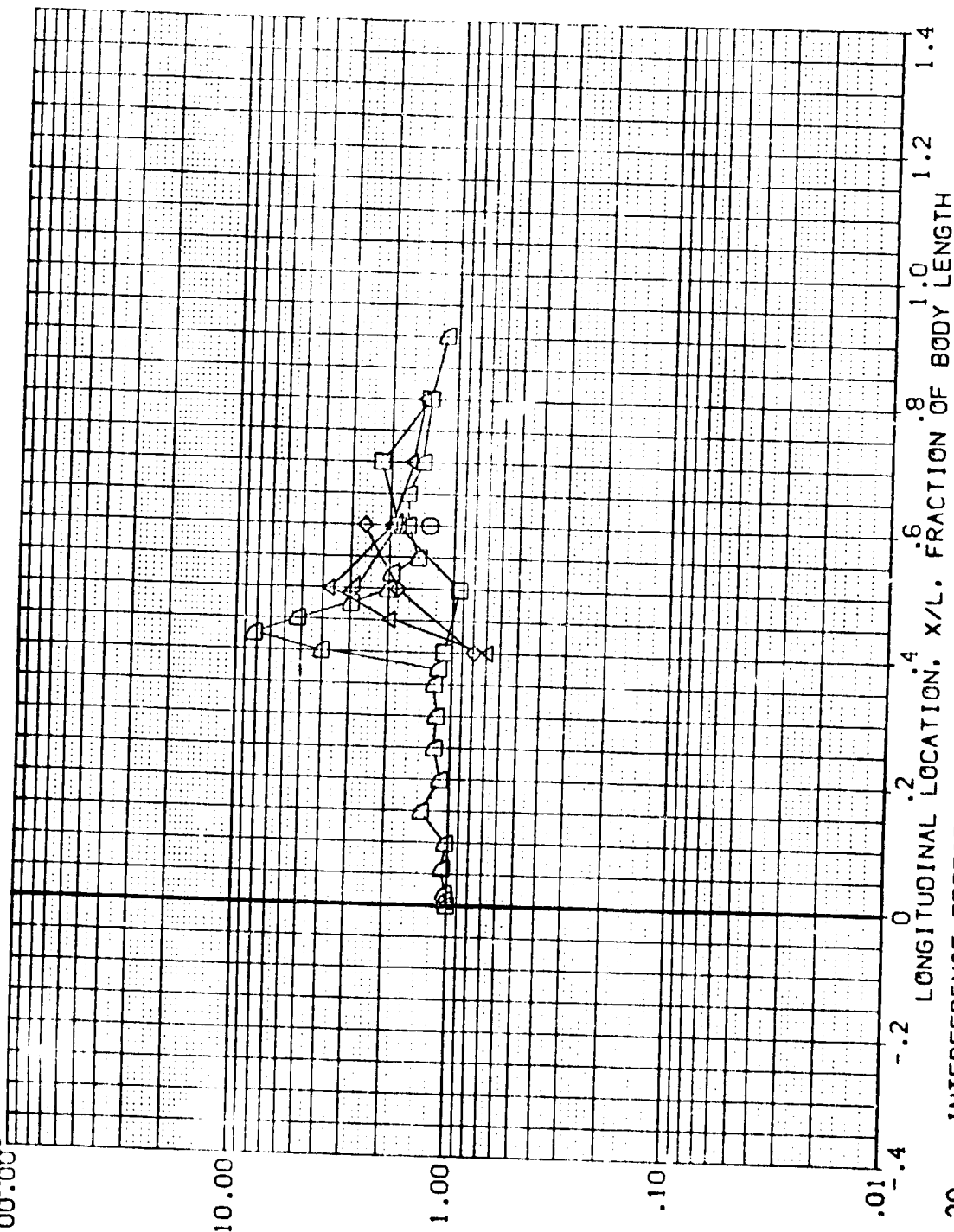


FIG 29 INTERFERENCE EFFECTS ON ORBITER ET - SMALL TRIPS

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COMB01) IH18 B10C5D7487M3F4V5 ORB BODY (18 ON)/(18 OFF) .000 .000 6.000
 (COMB04) IH18 B10C5D7487M3F4V5 ORB BODY (18 ON)/(18 OFF) .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

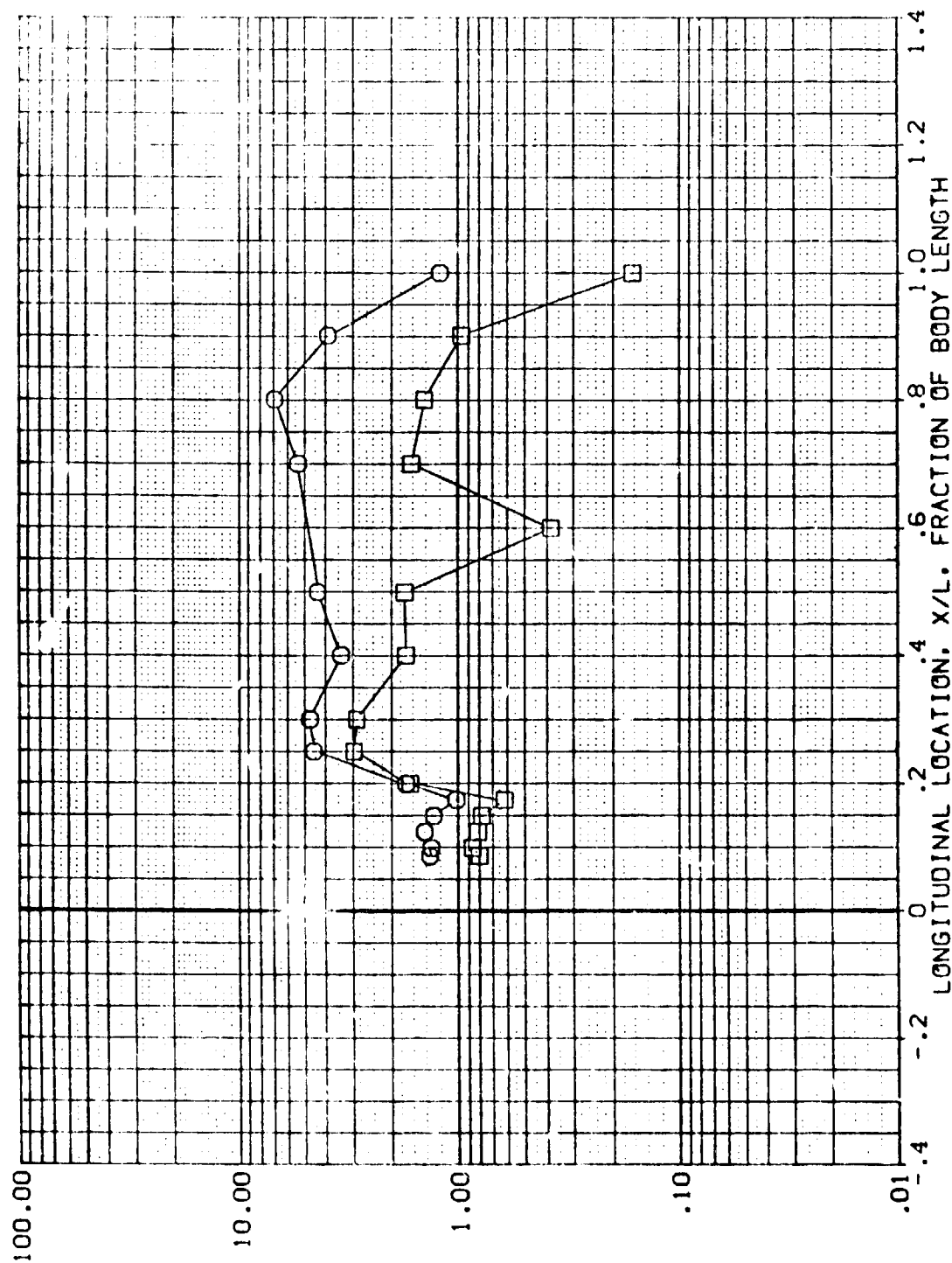


FIG 30 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-NO TRIPS

$\alpha_{RN}/L = 4.778$ $HAW/HT = .850$ $Y(BP) = .000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COMB01) I118 B10C507W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) .000 .000 6.000
 (COMB04) I118 B10C507W87M3F4V5 ORB BODY (T8 ON)/(T8 OFF) .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coef., h_i/h_u

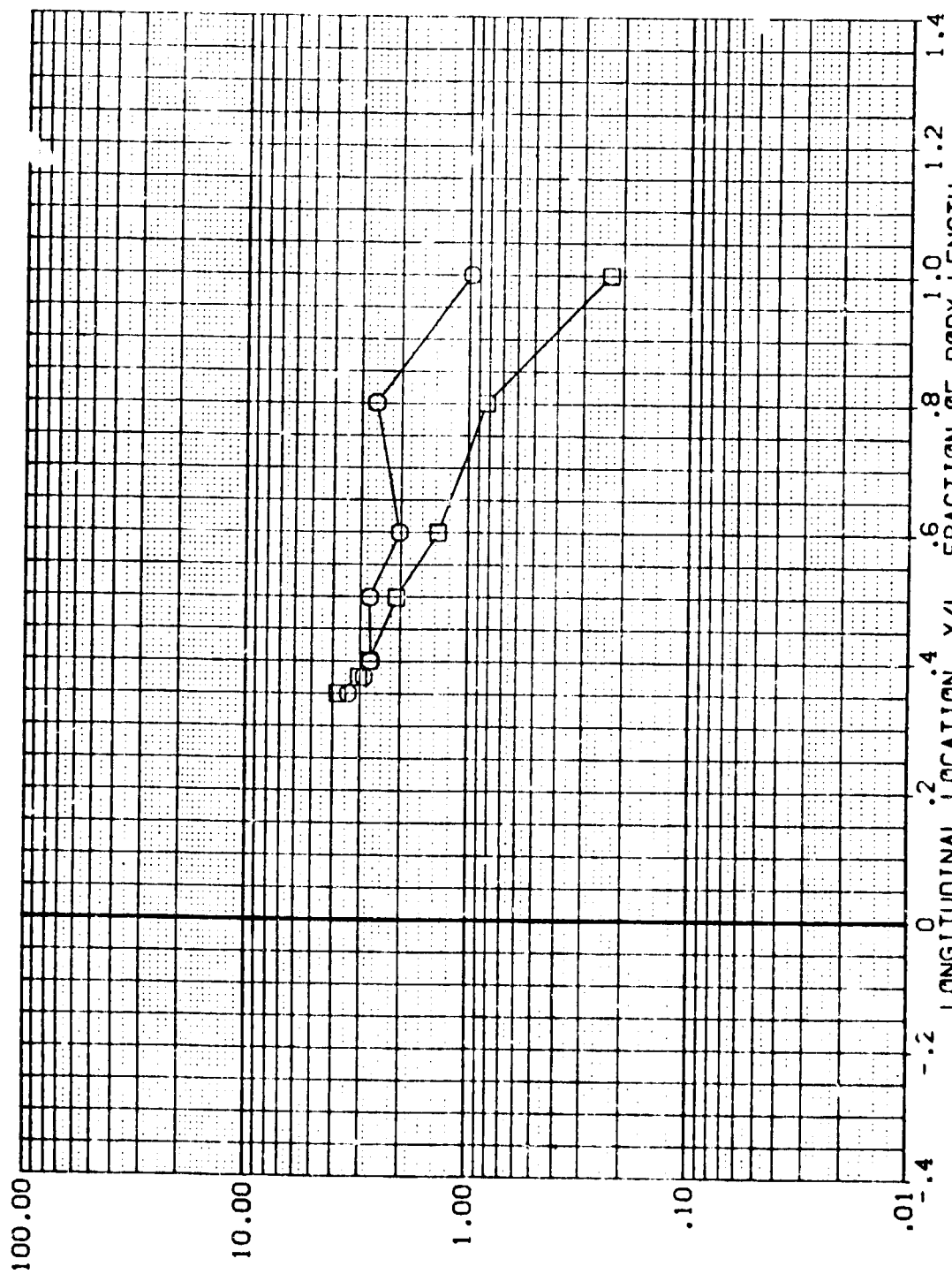


FIG 30 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-N0 TRIPS

ORNL/L = 4.778 HAW/HT = .850 Y(BP) = 70.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA MACH
 (COMB01) [H:8 B:0C507W87M3F4VS ORB BODY (T8 ON)/(T8 OFF) .000 6.000
 (COMB04) [H:8 B:0C507W87M3F4VS ORB BODY (T8 ON)/(T8 OFF) .000 6.000

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

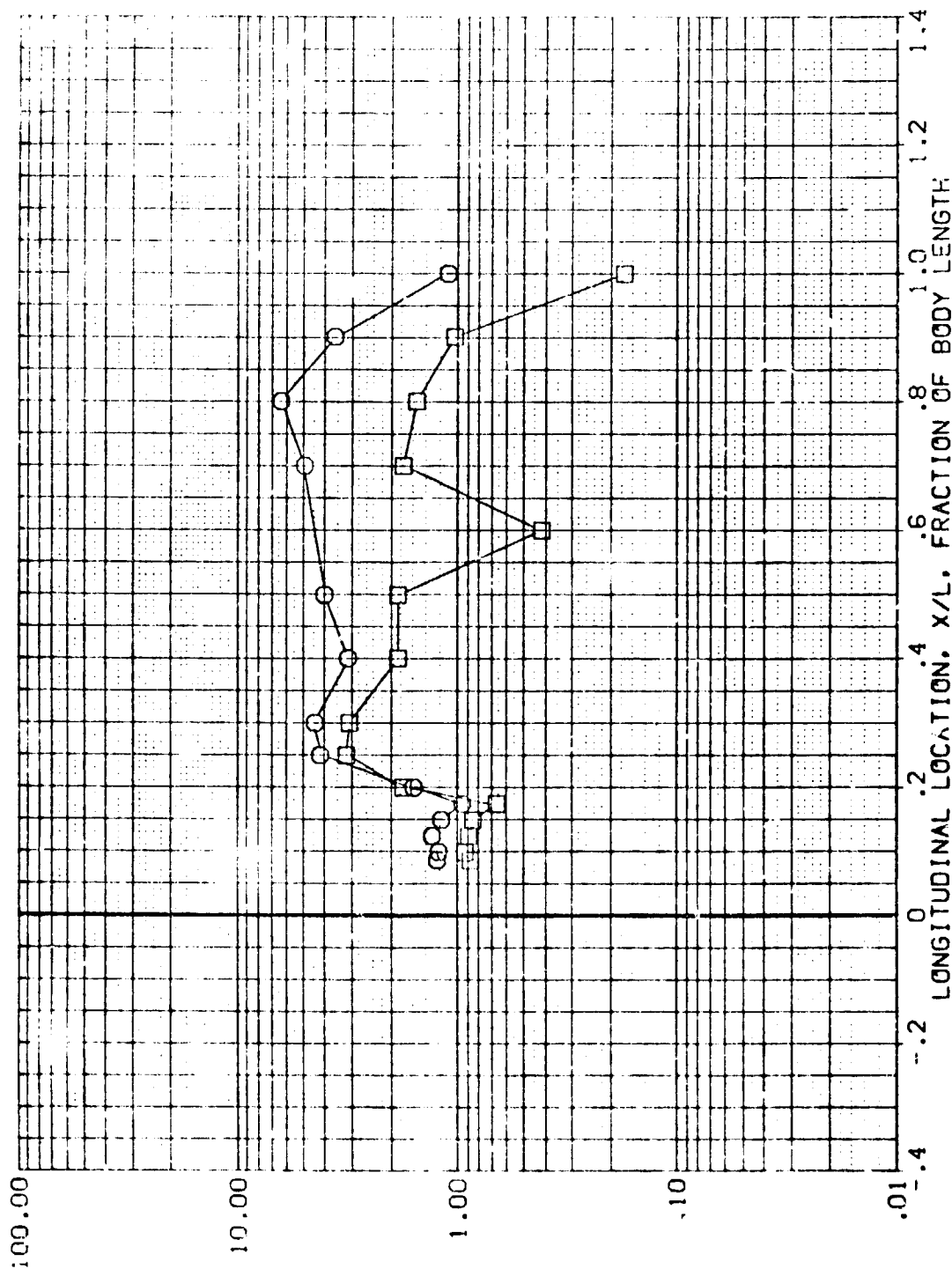


FIG 30 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-N0 TRIPS
 $\alpha_{RN}/L = 4.778$ $HAW/HT = 1.000$ $Y(BP) = .000$ PAGE 500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (COMB01) [] IH18 B10CJ07M3F4V5 ORB BODY (T8 ON)/(T8 OFF)
 (COMB04) [] IH18 B10CJ07M3F4V5 ORB BODY (T8 ON)/(T8 OFF)

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

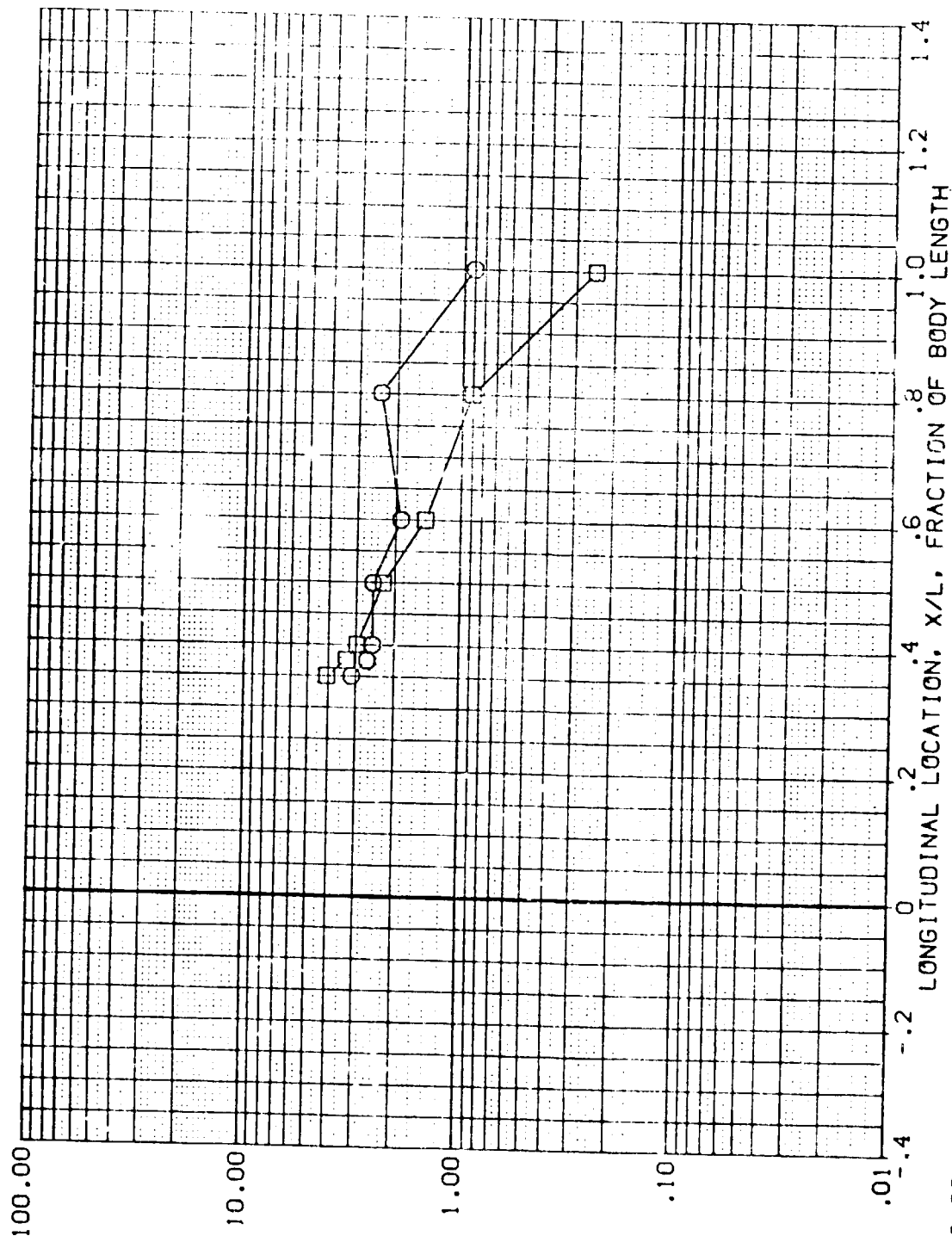


FIG 30 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-NO TRIPS

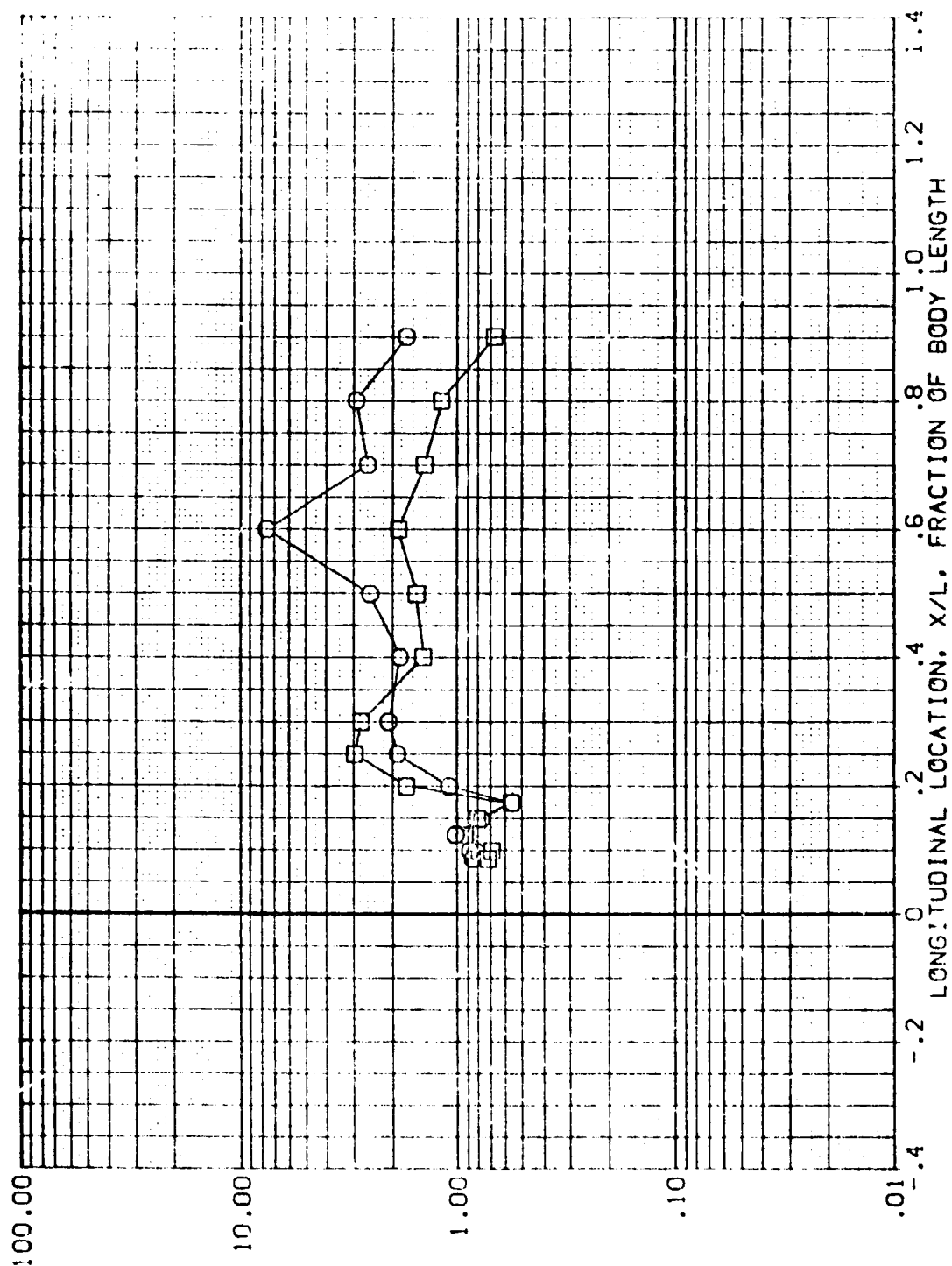
PRN/L = 4.778 HAW/HT = 1.000 Y(BP) = 70.000

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(COMB11)	IM18 B10C5D7W87M2F4V5X26	.000	.000	6.000	.031
(COMB18)	IM18 B10C5D7W87M3F4V5X26	.000	-5.000	6.000	.031

FIG 31 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-SMALL TRP

ORN/L = 4.728 HAW/HT = .850 Y(BP) = .000

PAGE 502



DATA SET SYMBOL (COMB11) 8
 CONFIGURATION DESCRIPTION
 IH18 810C5D7487M3F4V5X26 BODY (T8 ON)/(T8 OFF)
 IH18 810C5D7487M3F4V5X26 BODY (T8 ON)/(T8 OFF)
 BETA .000 .000
 ALPHA .000 -5.000
 MACH 6.000 6.000
 X-HT .031 .031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

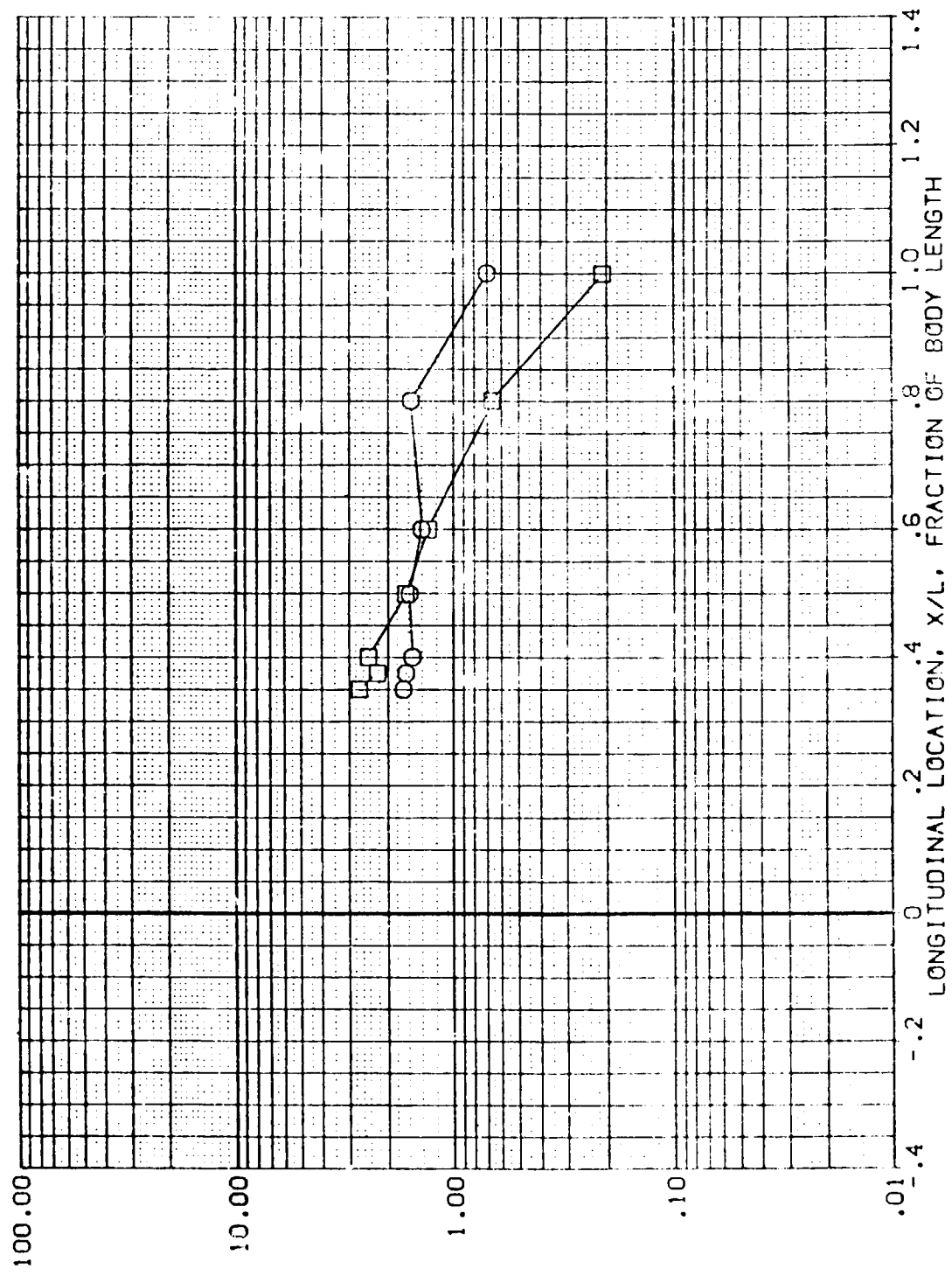


FIG 31 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-SMALL TRP

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

DATA SET SYMBOL
(8:8-55)
(1:5-00)

CONFIGURATION DESCRIPTION

NAME	ROOM	DATE	TIME	STATUS	REMARKS
11118	810C507W97H3F4V5x26	600Y	(18 ON)/(18 OFF)		
11118	810C507W97H3F4V5x26	600Y	(18 ON)/(18 OFF)		

BETA	ALPHA
.000	.000
.000	-5.000

MACH X-H^r

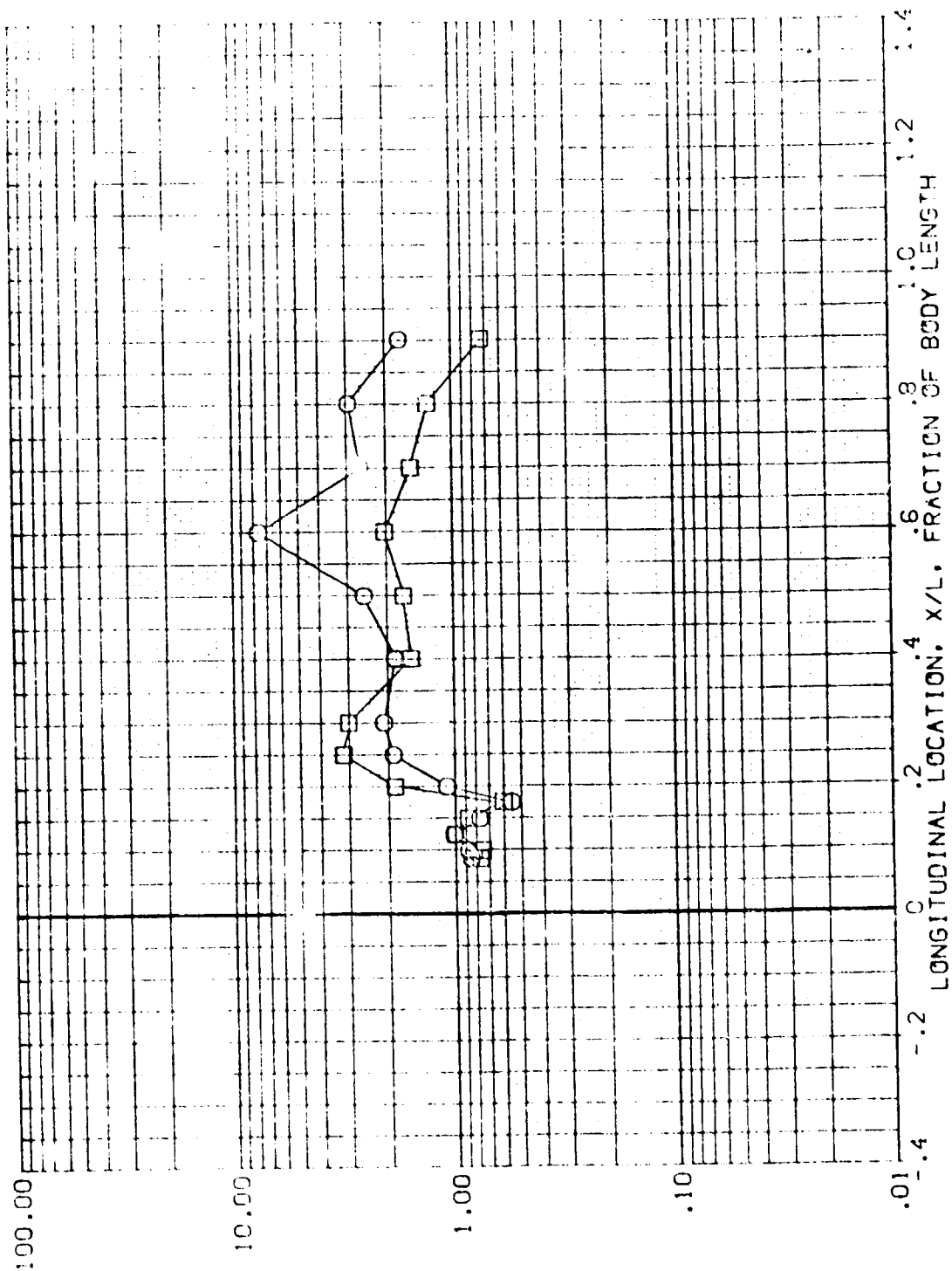



FIG 31 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-CR3BITER BODY-SMALL TRP

DATA SET SYMBOL: (COMB11) (COMB18)  CONFIGURATION DESCRIPTION: IH18 B10C5D7M87M3F4V5X26 BODY (T8 ON)/(T8 OFF) IH18 B10C5D7M87M3F4V5X26 BODY (T8 ON)/(T8 OFF) BETA: .000 .000 ALPHA: .000 -.5.000 MACH: 6.000 6.000 X-HT: .031 .031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

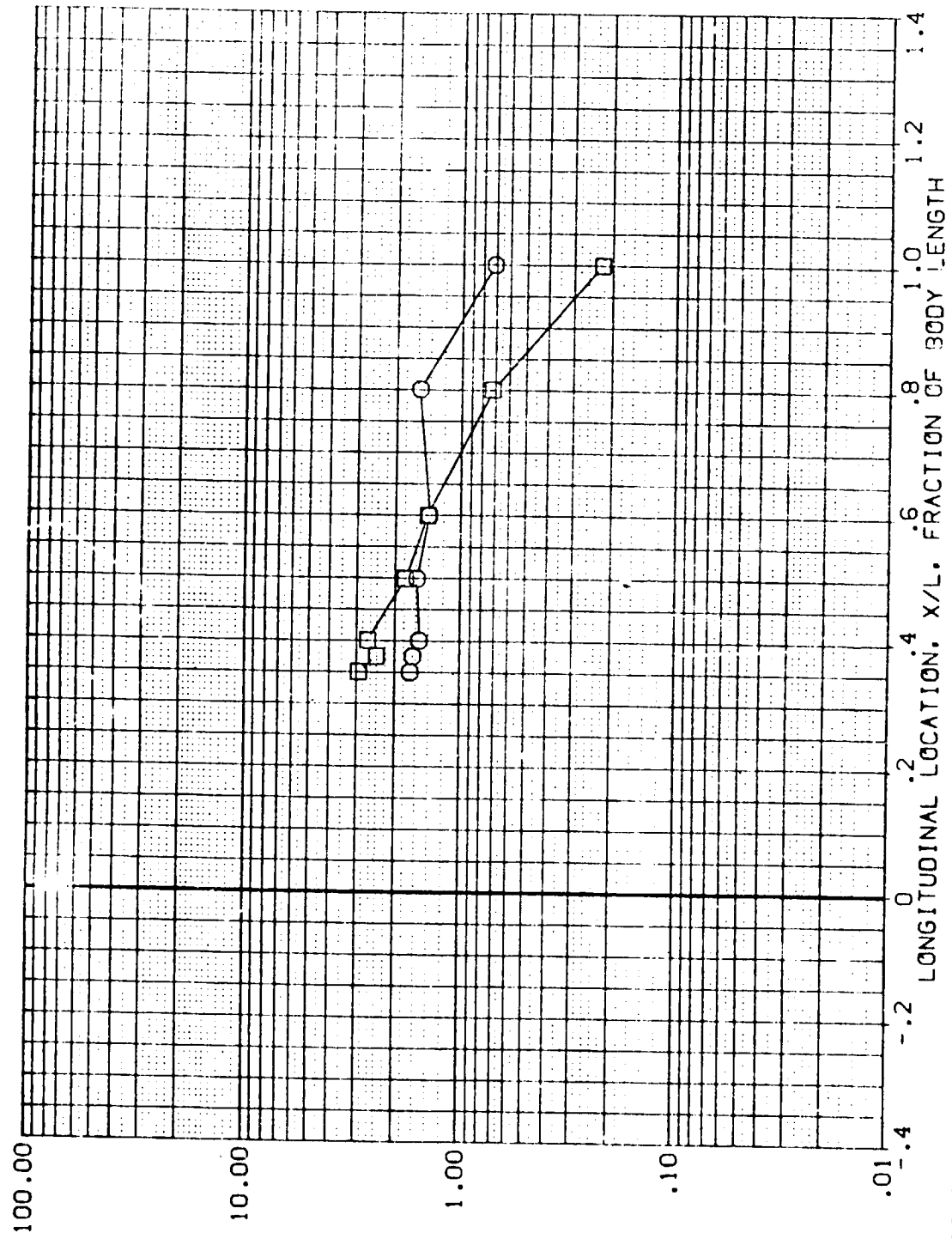


FIG 31 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER BODY-SMALL TRP
 RN/L = 4.728 HAW/HT = 1.000 Y(BP) = 70.000 PAGE 505

DATA SET SYMBOL
(CONV01)
(CONV04)

CONFIGURATION DESCRIPTION

1H18 B10C507-97MPC4V5 ORB WING (TB DN)/(TB OFF)
1H18 B10C507-97MPC4V5 ORB WING (TB DN)/(TB OFF)

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

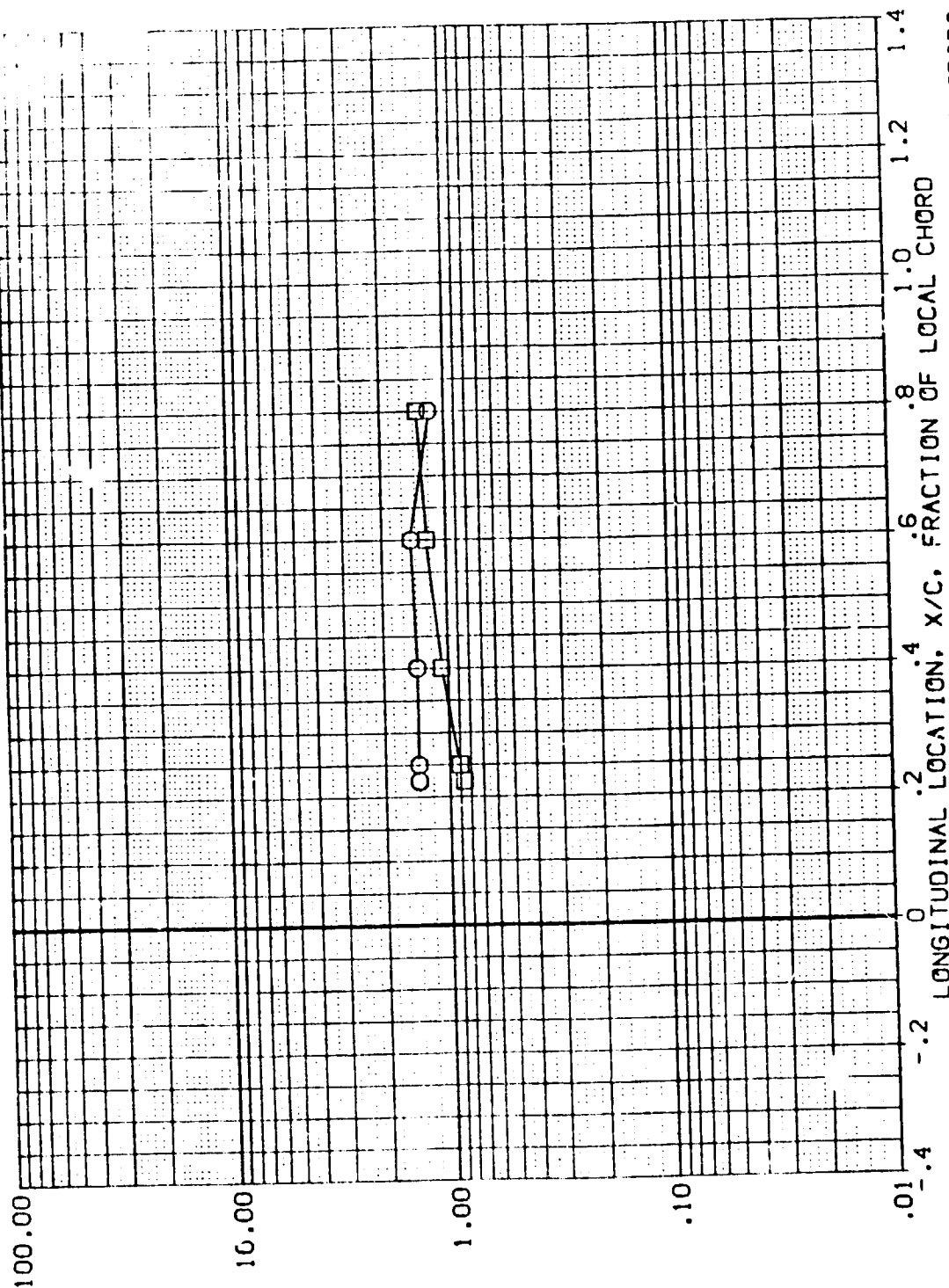


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS
GRN/L = 4.778 HAW/HT = .850 2Y/B = .400

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COW01) IHI8 BLOC507#87M3F4V5 ORB WING (18 ON)/(18 OFF) .000 .000 6.000
 (COW04) IHI8 BLOC507#87M3F4V5 ORB WING (18 ON)/(18 OFF) .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., HI/HU

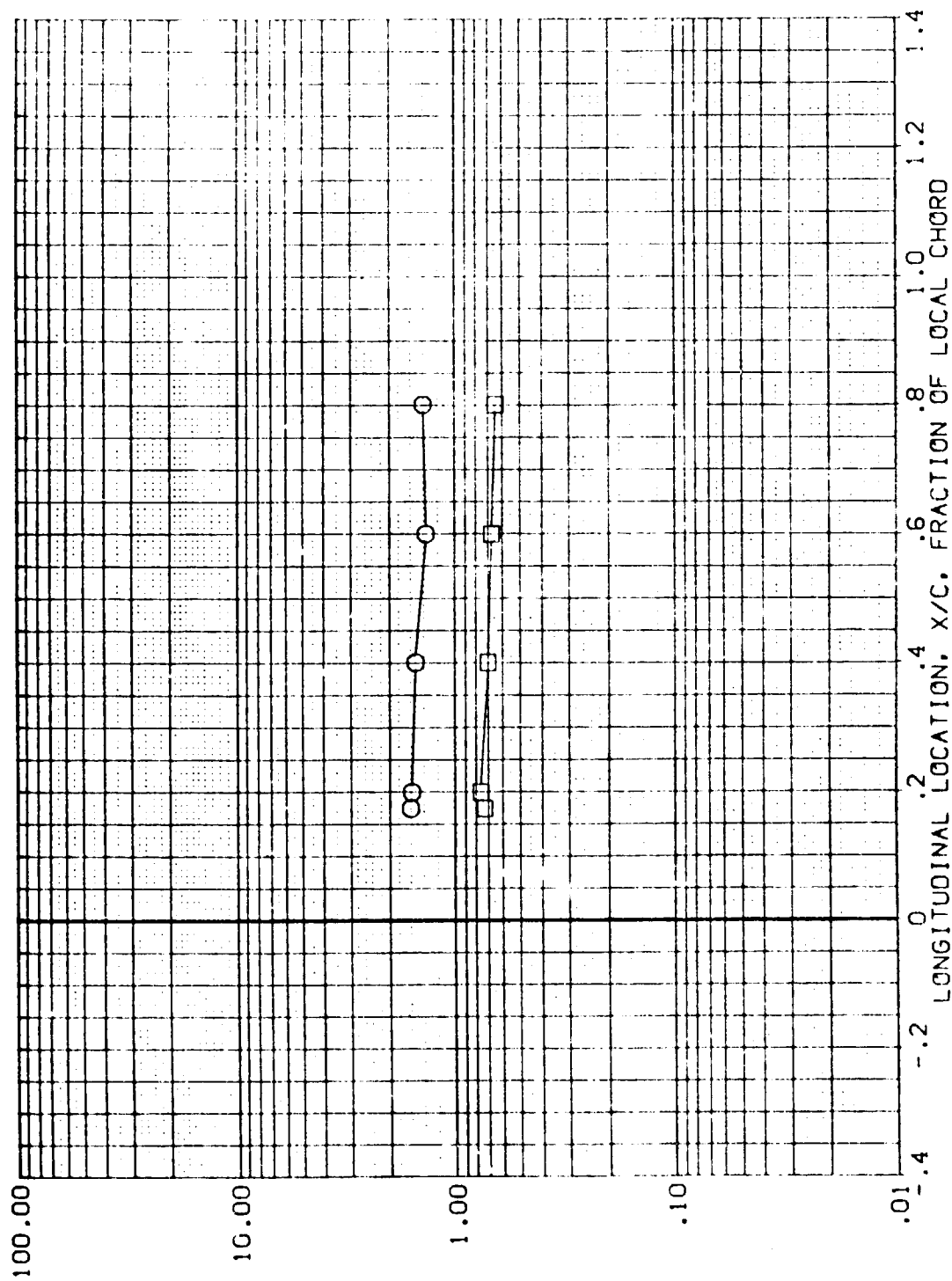


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS

FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COM-01) IN-18 81005074873F4V5 ORB WING (T8 ON)/(T8 OFF) .000 .000 6.000
 (COM-04) IN-18 81005074873F4V5 ORB WING (T8 ON)/(T8 OFF) .000 -.5.000 6.000

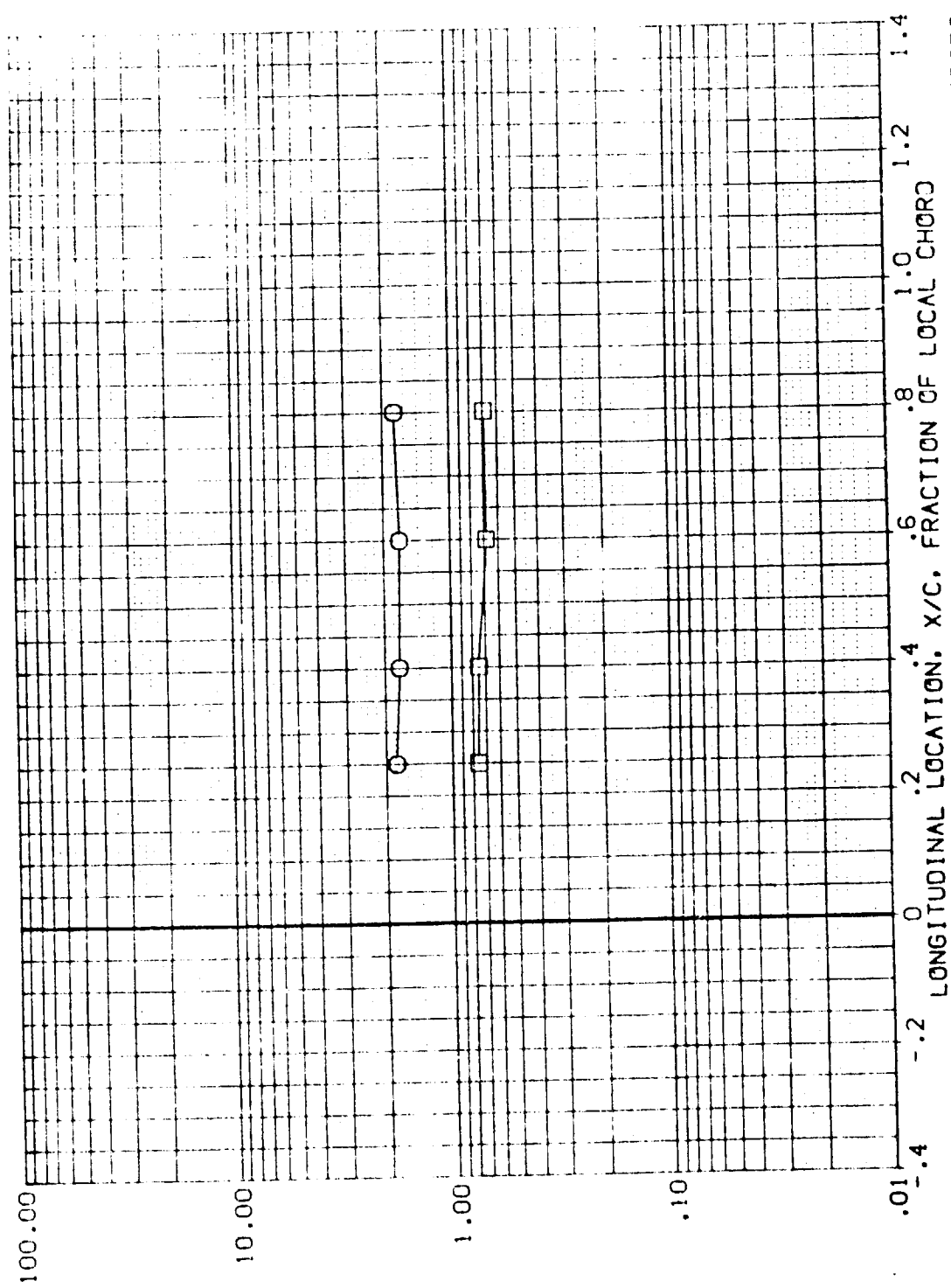


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS
 ORN/L = 4.778 HAW/HT = .850 2Y/B = .800

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COMV01) 8 IH18 B10C5D7W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) .000 .000 6.000
 (COMV04) IH18 B10C5D7W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u $Re_{N/L} = 4.778$ $h_{AW}/h_T = 1.000$ $2Y/B = .400$

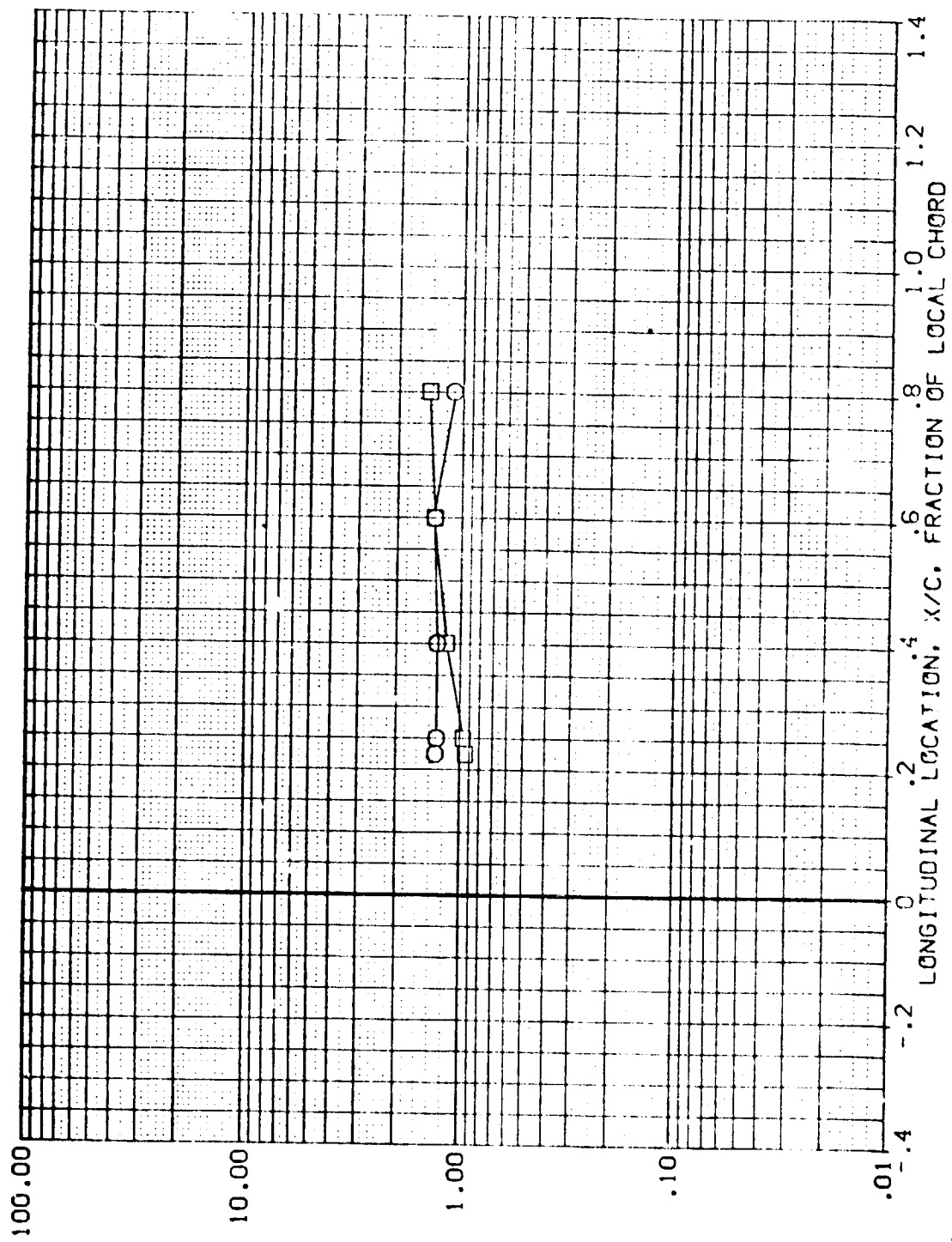


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C, 401) H1B B10C507W87M3F4V5 ORB WING (TB ON)/(TB OFF)
 (C, 404) H1B B10C507W87M3F4V5 ORB WING (TB ON)/(TB OFF)

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

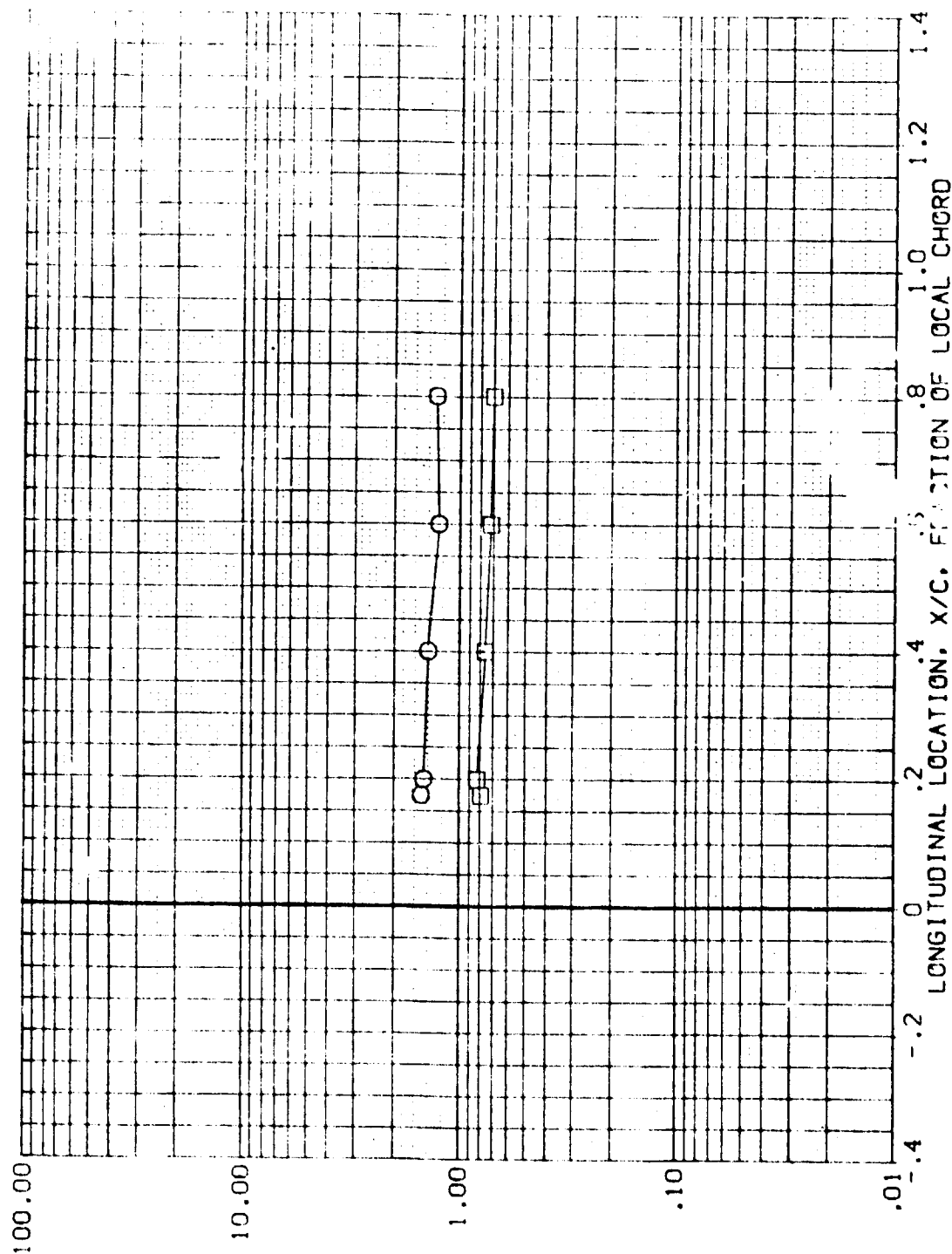


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS

ARN/L = 4.778 HAW/HT = 1.000 2Y/B = .600

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COMV01) IHI8 B10C507W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) .000 .000 5.000
 (COMV04) IHI8 B10C507W87M3F4V5 ORB WING (T8 ON)/(T8 OFF) .000 -.5.000 5.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

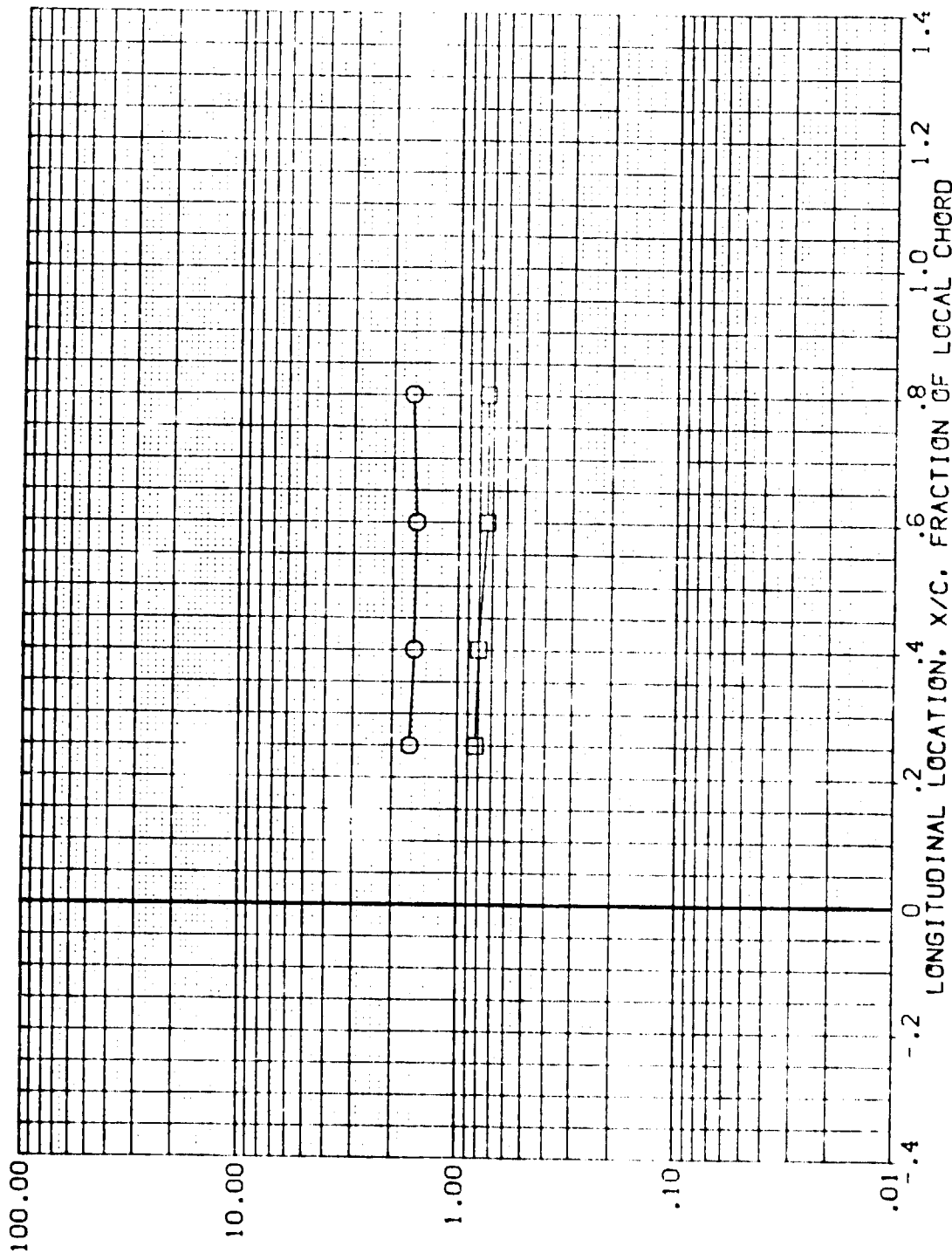


FIG 32 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-NO TRIPS

$Re_{N/L} = 4.778$ $h_{AW}/h_T = 1.000$ $2Y/B = .800$

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL (COW11) (COW19) CONFIGURATION DESCRIPTION WING (18 ON)/(18 OFF) WING (18 ON)/(18 OFF) BETA .000 .000 ALPHA .000 -5.000 MACH 5.000 5.000 X-HT .031 .031

FIG 33 COMPARISON OF UNDISTURBED HEAT TRANSFER COEFF. HI/HU LONGITUDINAL LOCATION, X/C , FRACTION OF LOCAL CHORD

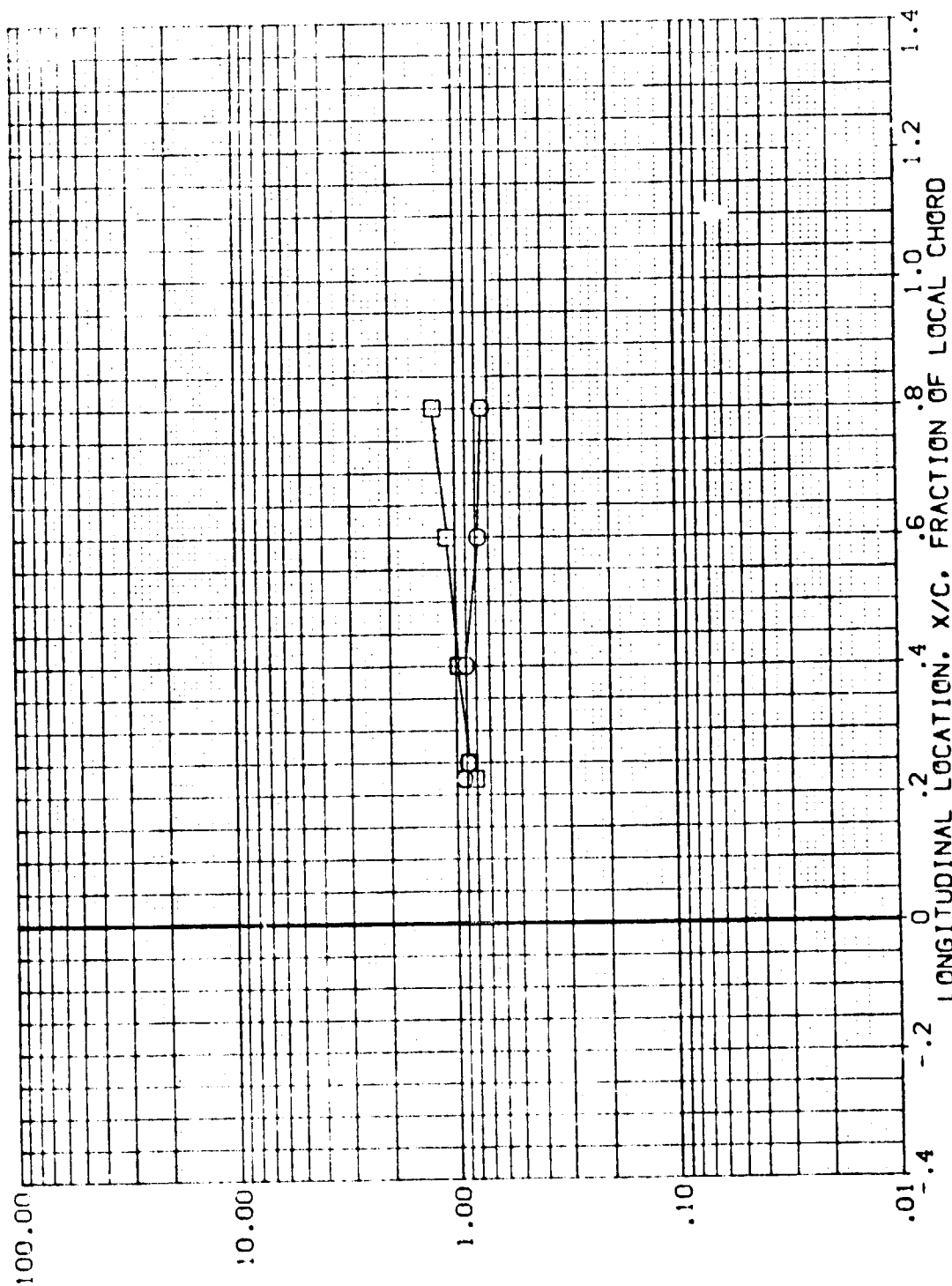


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-SMALL TRP
 ORN/L 4.728 HAW/HT = .850 2Y/B = .400
 PAGE 512

DATA SET SYMBOL
(COMW11)
(COMW10)

CONFIGURATION DESCRIPTION

IM18 010C507W18M3F4V5X26 WING (T8 ON)/(T8 OFF)
IM18 010C507W18M3F4V5X26 WING (T8 ON)/(T8 OFF)

BETA

.000
.000

ALPHA

.000
-5.000

MACH

5.000
5.000

X-HT

.031
.031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

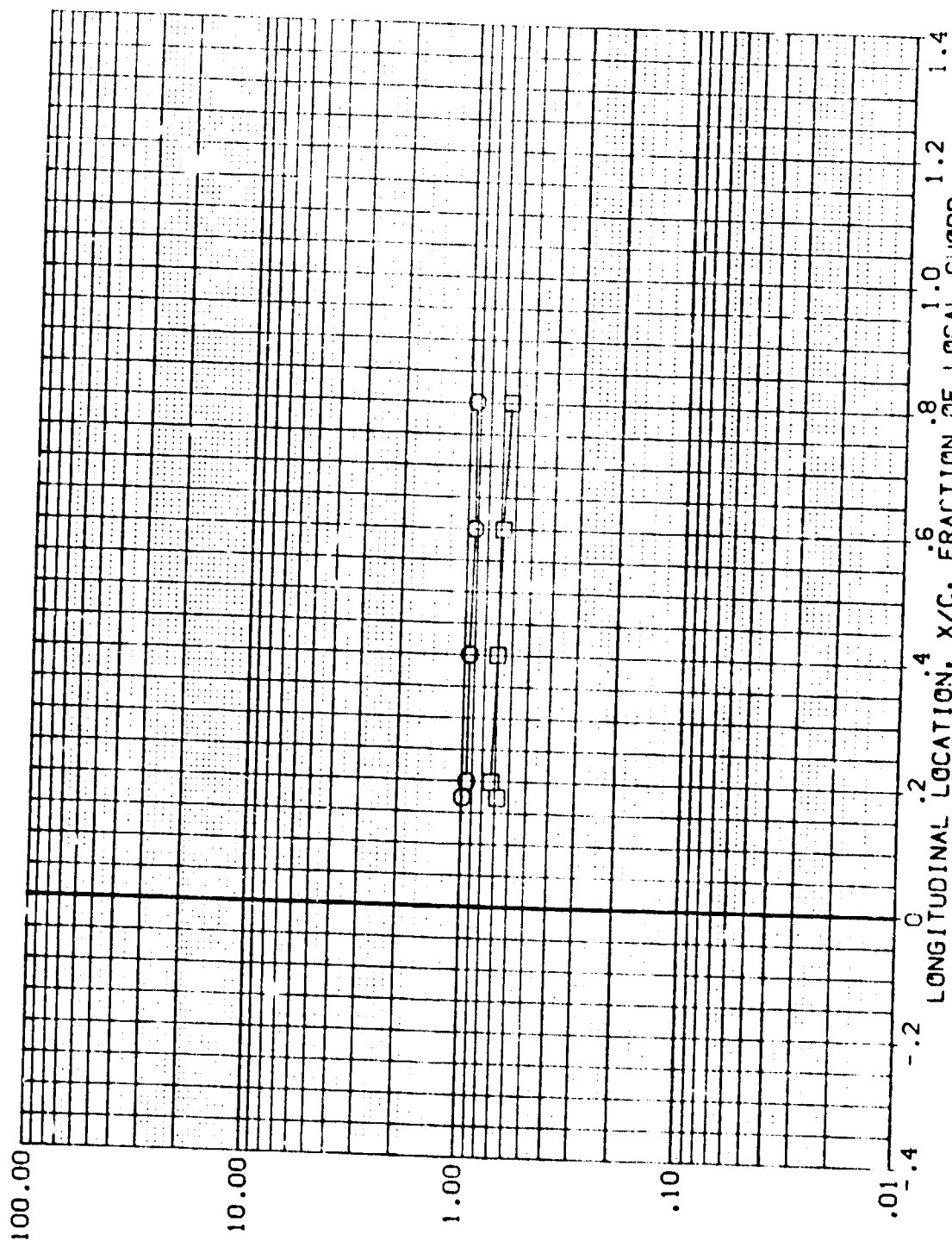


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-SMALL TRP

$h_i/h_u = 4.728$ $h_u/h_i = .850$ $2Y/B = .600$

DATA SET SYMBOL
(CONV11)
(CONV18)

CONFIGURATION DESCRIPTION
IH18 810C507W18M3F4V5X26 WING (TB ON)/(TB OFF)
IH18 810C507W18M3F4V5X26 WING (TB ON)/(TB OFF)

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000
X-HT .031 .031

ATION OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF. h_i/h_u

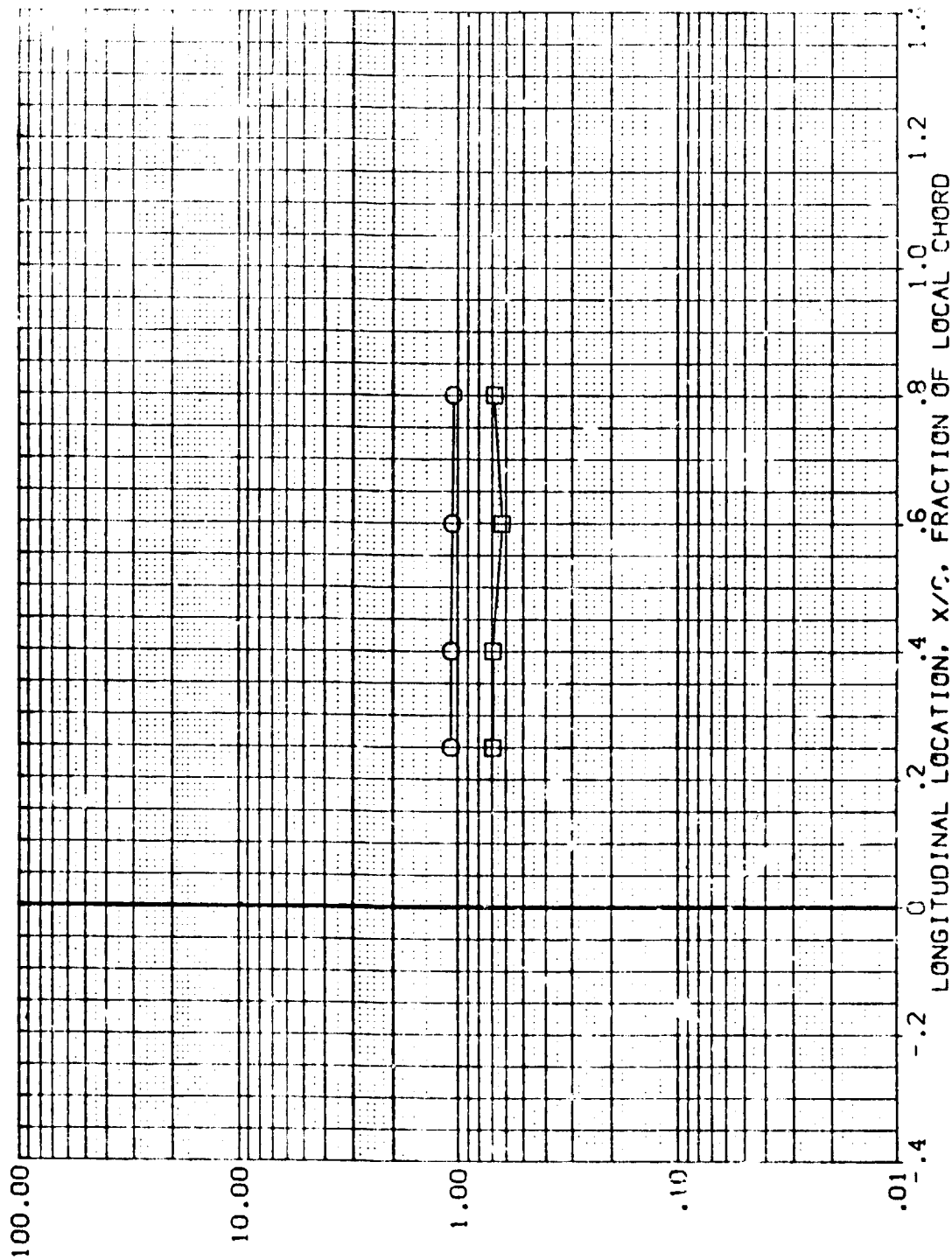


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-OR LATER WING-SMALL TRP

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(CONW11) B

IM18 B10C507W18M3F4V5X26 WING (18 ON)/(18 OFF)

.000 .000 6.000 .031

(CONW18) IM18 B10C507W18M3F4V5X26 WING (18 ON)/(18 OFF)

.000 .000 6.000 .031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

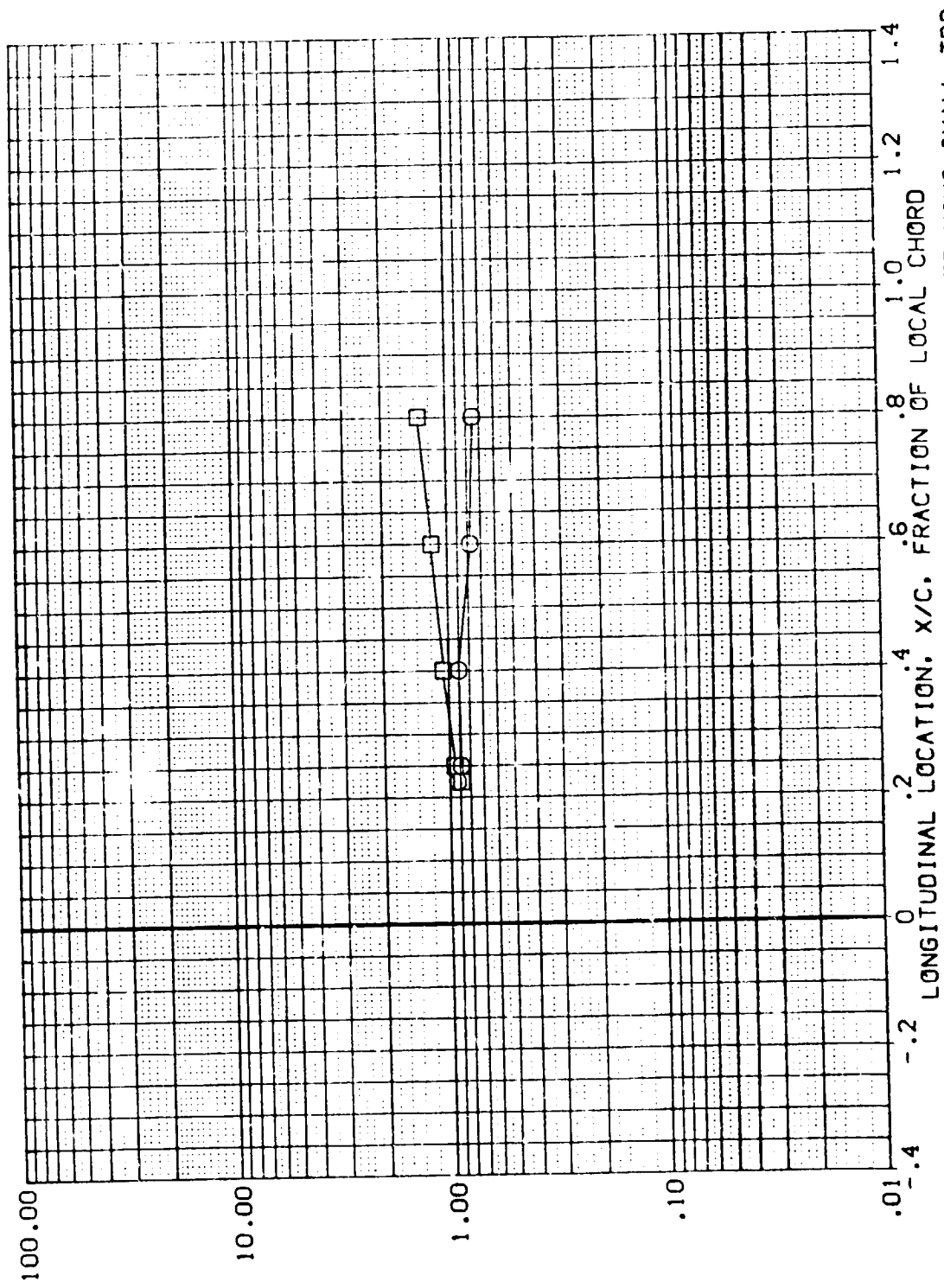


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-SMALL TRP

$c_{RN}/L = 4.728$ $HAW/HT = 1.000$ $2Y/B = .400$

DATA SET SYMBOL
(COW11)
(COW18)

CONFIGURATION DESCRIPTION
IH18 B10C307N18M2F4V5X26
IH18 B10C307N18M2F4V5X26

WING (TB ON)/(TB OFF)
WING (TB ON)/(TB OFF)

BETA
.000
-5.000

ALPHA
.000
-5.000

MACH
8.000
8.000

X-HT
.031
.031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF.. HI/HU

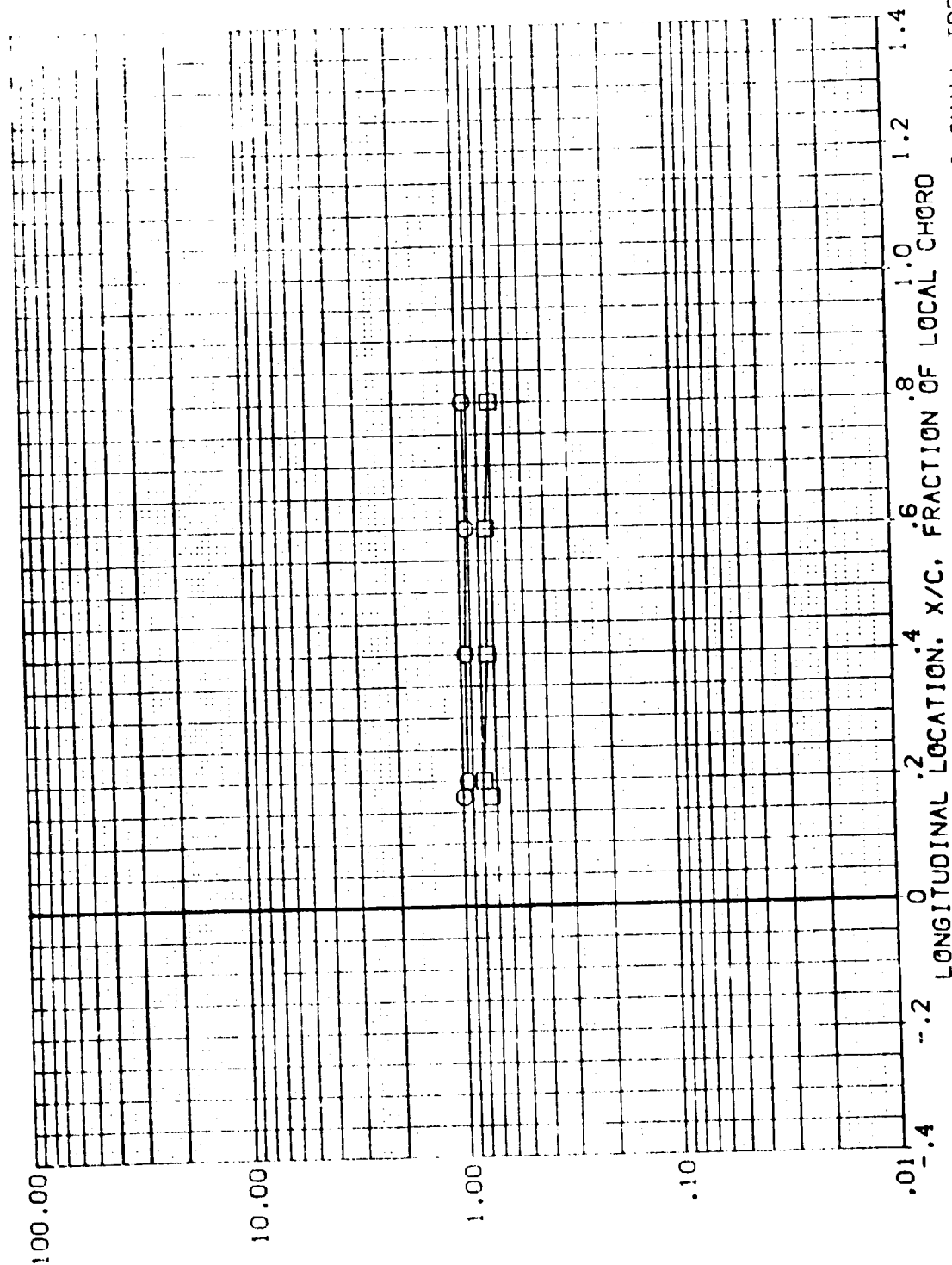


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-SMALL TRP
ORNL/L = 4.728 HAW/HT = 1.000 2Y/B = .600

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
(COMV11)	IM18 B10C5D7W18M3F4V3X26	.000	.000	6.000	.031
(COMV18)	IM18 B10C5D7W18M3F4V3X26	.000	-5.000	6.000	.031

Ratio of local interference to undisturbed heat transfer coeff., h_i/h_u

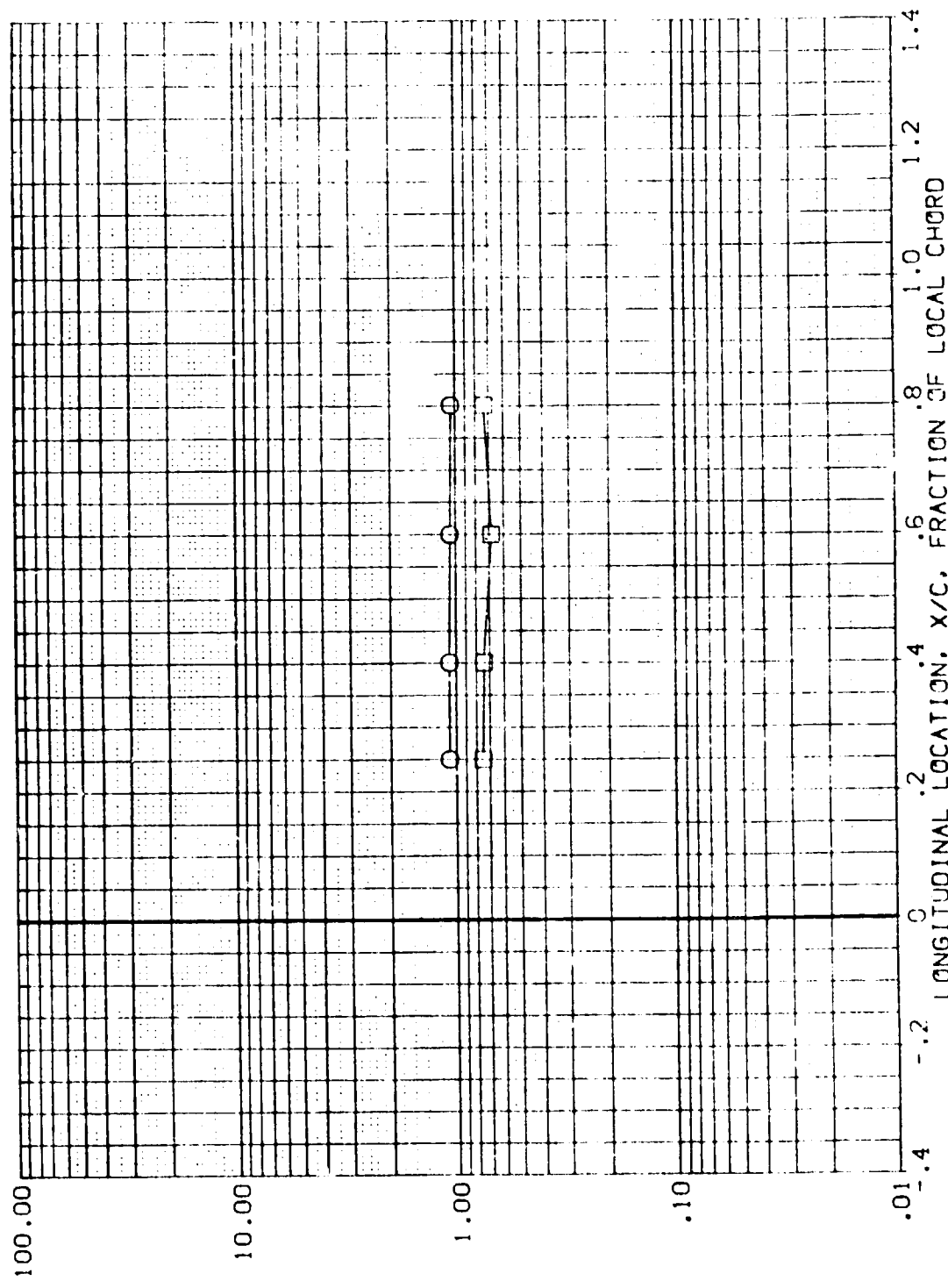


FIG 33 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA-ORBITER WING-SMALL TPP

ORNL/L = 4.728 HAW HT = 1.000 2Y/B = .800

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

Ratio of Local Interference to Undisturbed Heat Transfer Coef., h_i/h_u

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (LIGHT02) [H18 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER] .000 .000 5.000
 (COMT03) [H18 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER] .000 -.5.000 5.000

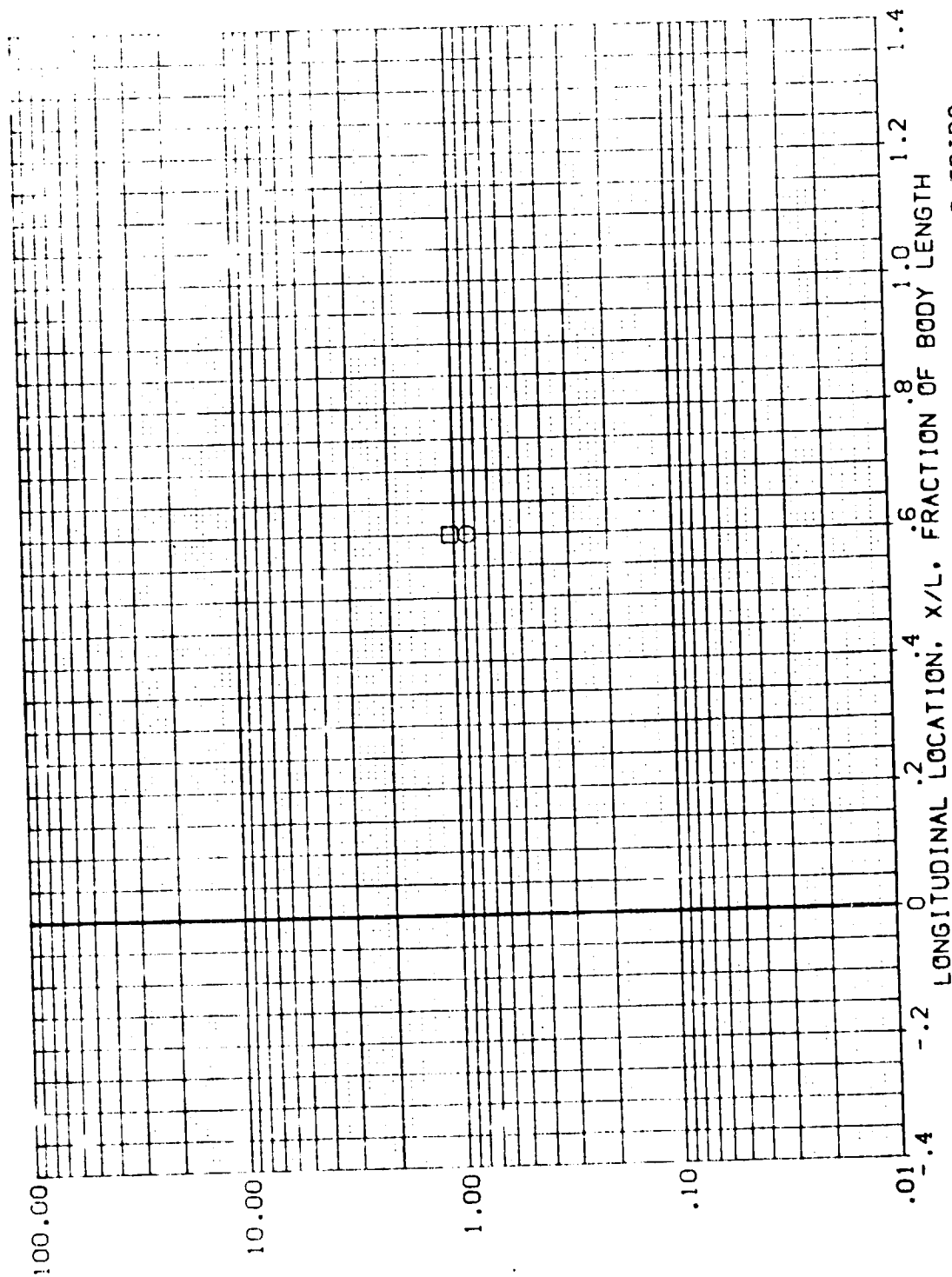


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

$Re_{RN/L} = 4.807$ $HAW/HT = .850$ $PHI = 67.500$ PAGE 518

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u
 DATA SET SYMB. ☐ (CONT02)
 (CONT03)

CONFIGURATION DESCRIPTION
 IN18 TB TANK (IN)/(OUT OF)
 IN18 TB TANK (IN)/(OUT OF)

PRESENCE OF ORBITER
 PRESENCE OF ORBITER

BETA
 .000

ALPHA
 -5.000

MACH
 6.000

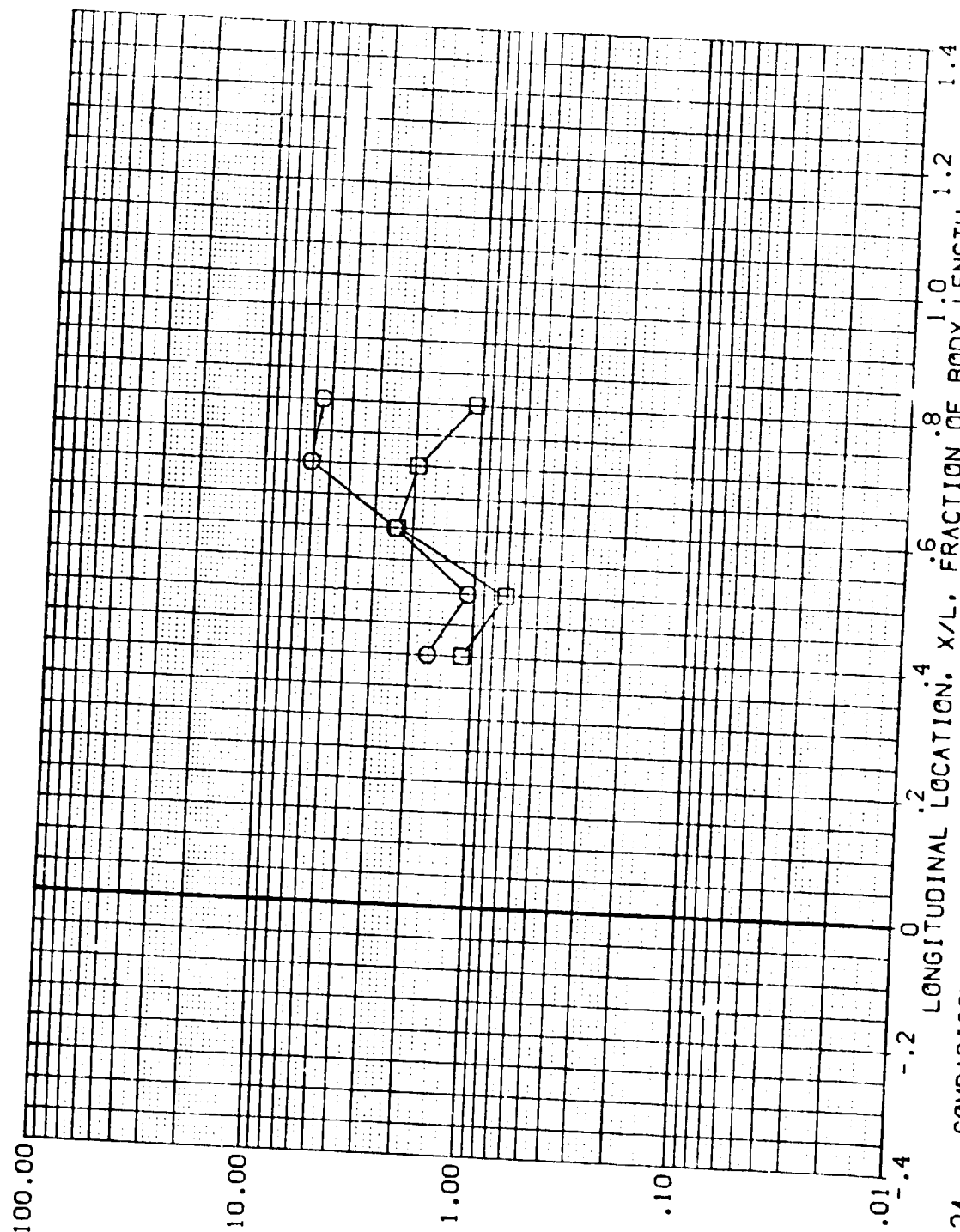


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS
 $q_{RN}/L = 4.907$ $HAW/HT = .850$ $PHI = 90.000$

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH
 (COMT02) (H18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER .000 .000 6.000
 (COMT03) (H18 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER .000 -5.000 6.000

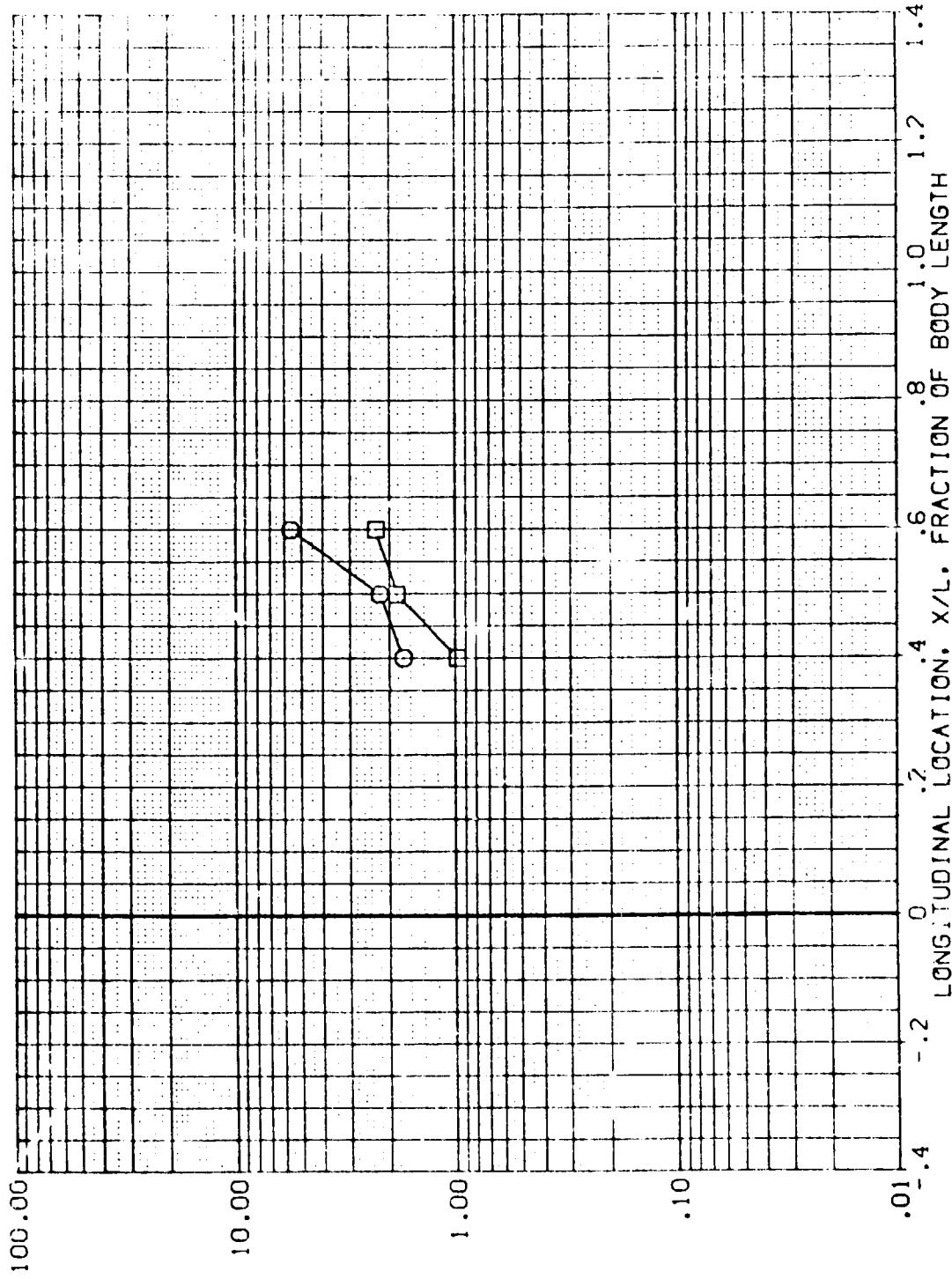


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

ORIN/L = 4.807 HAW/HT = .850 PHI = 112.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH

(CONT02) IM18 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER .000 .000 6.000

(CONT03) IM18 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

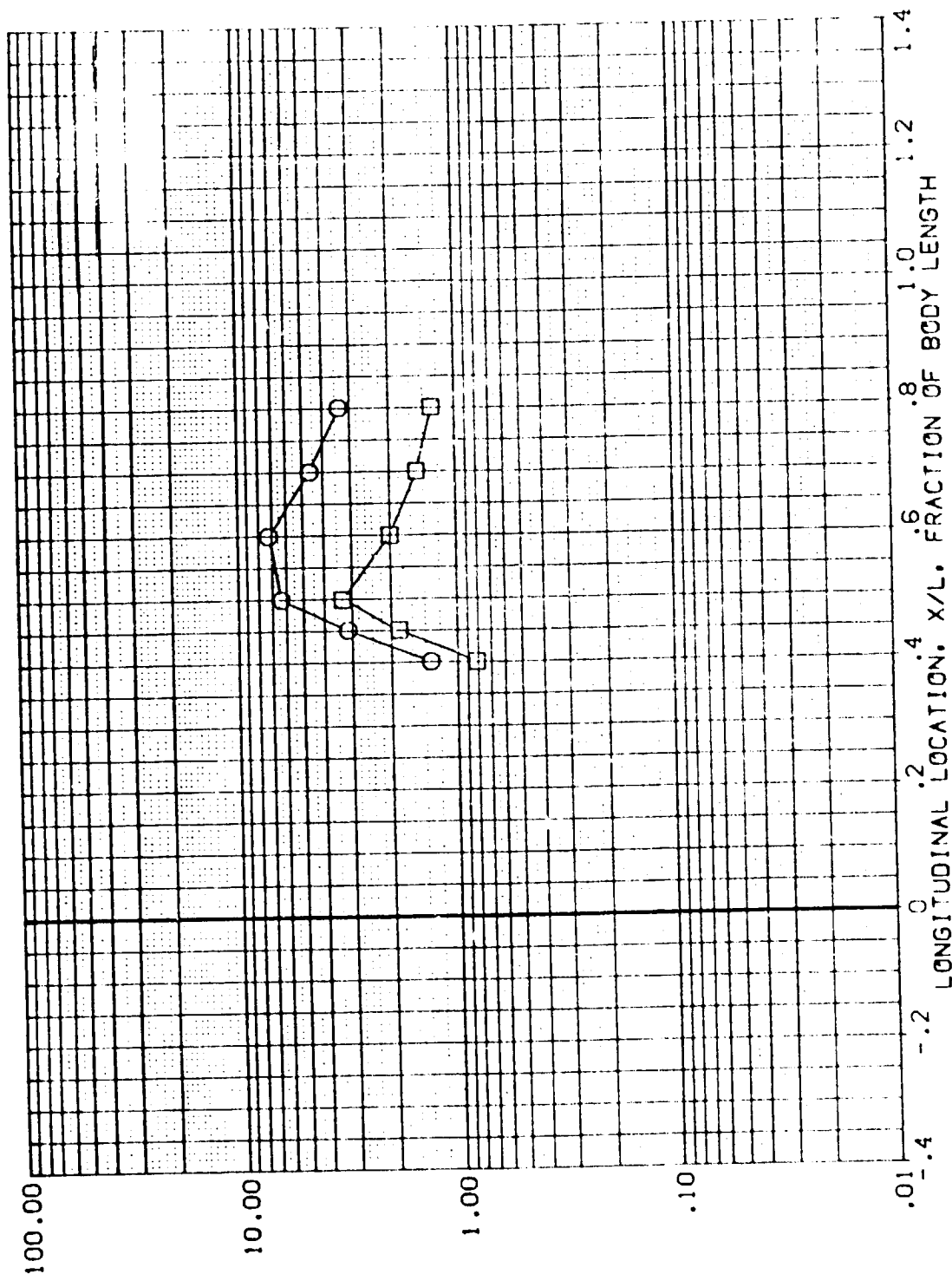


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

DATA SET SYMBOL CONFIGURATION DESCRIPTION PRESENCE OF ORBITER PRESENCE OF ORBITER
 (COMT02) [] HI18 TB TANK (IN)/(OUT OF) HI18 TB TANK (IN)/(OUT OF)
 (COMT03) []

BETA ALPHA MACH
 .000 .000 6.000
 .000 -5.000 6.000

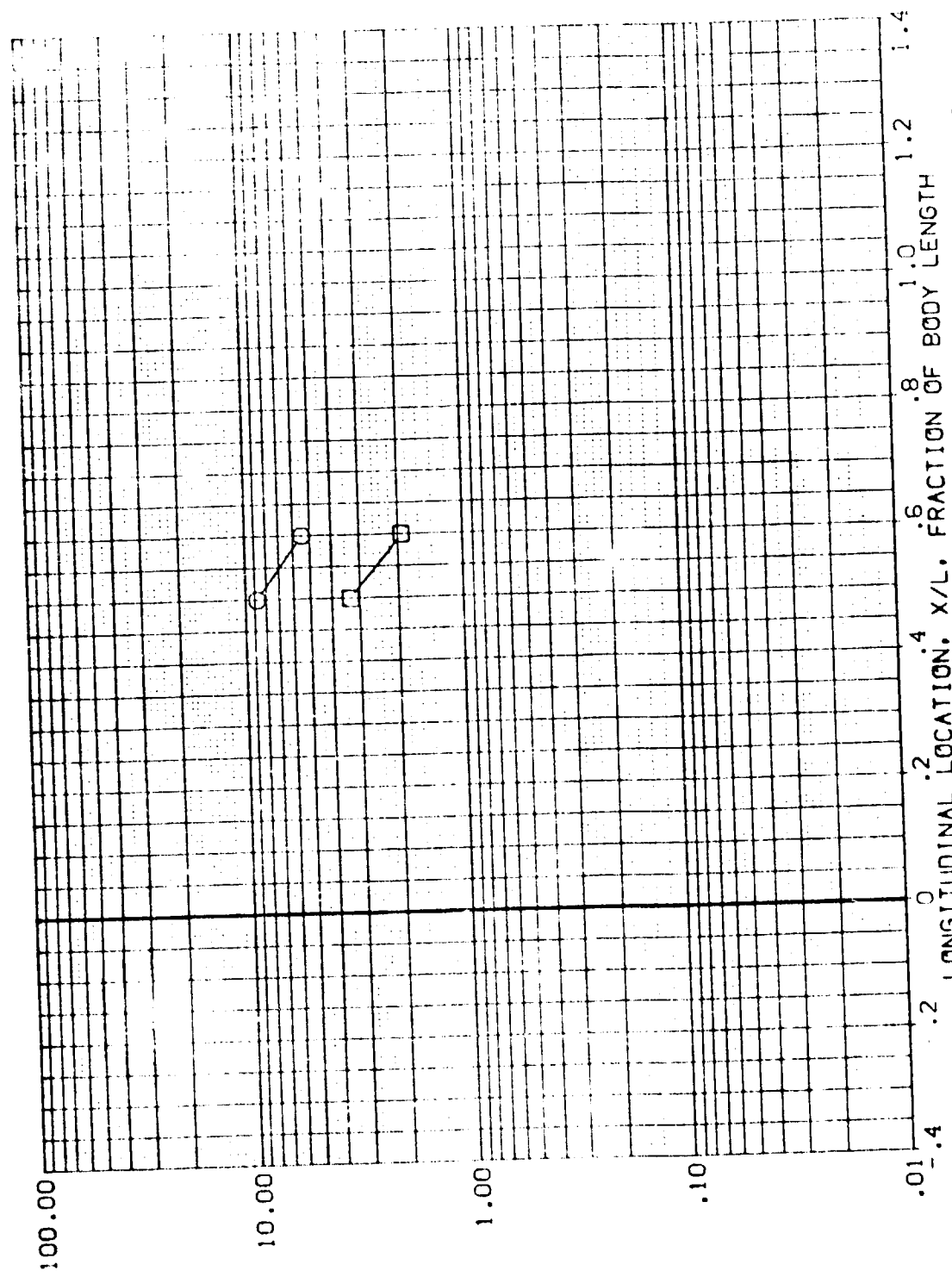


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

ORIN/L = 4.807 HAW/HT = .850 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH

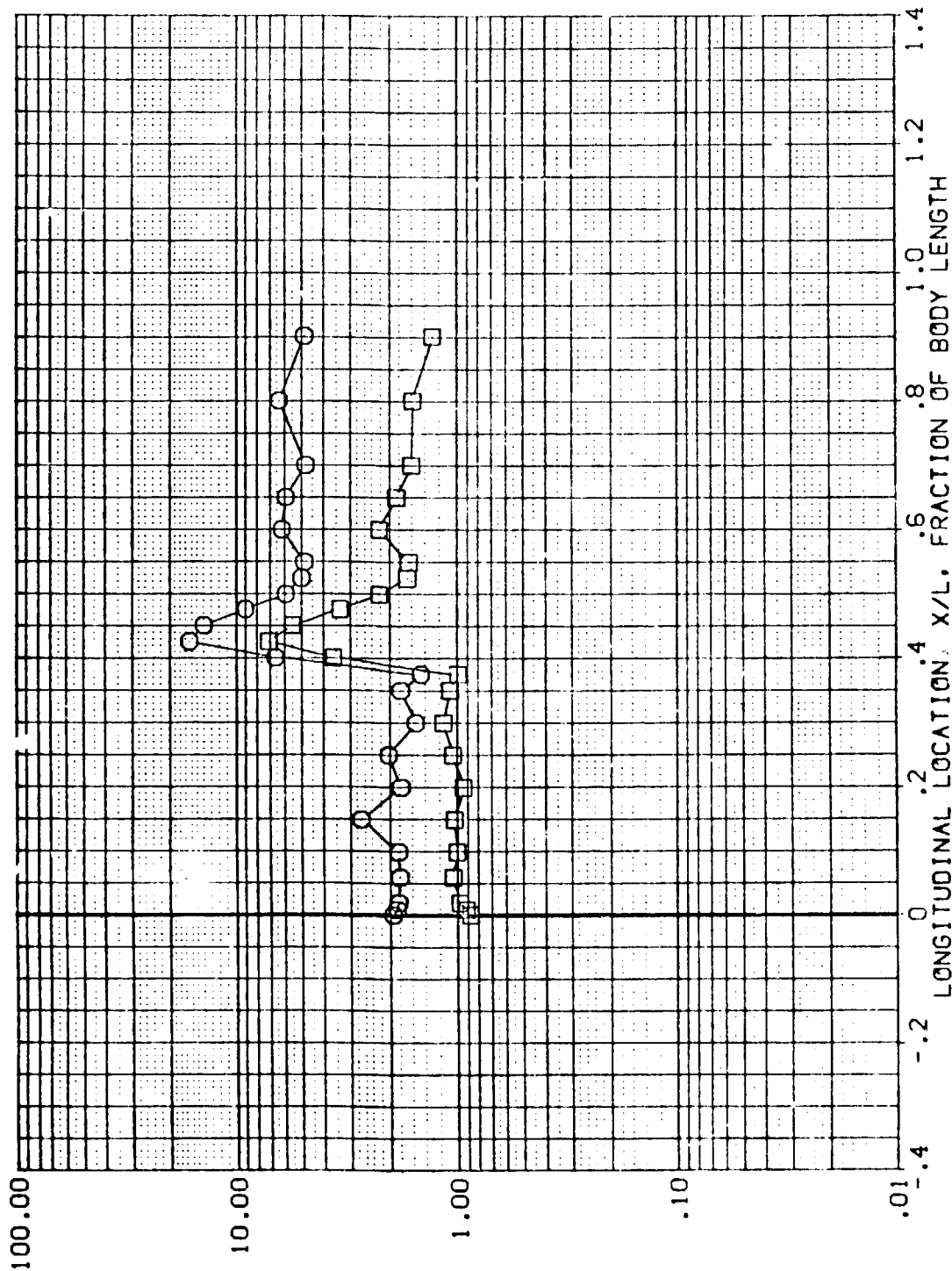
(COMT02) I-18 TB TANK (IN)/(OUT OF) .000 .000 5.000

(COMT03) I-18 TB TANK (IN)/(OUT OF) .000 -.5.000 5.000

FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

PAGE 523

ORNL/L = 4.807 HAW/H^T = .850 PHI = 180.000



REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

DATA SET SYMBOL
(COMT02)
(COMT03)

CONFIGURATION DESCRIPTION
IH18 TB TANK (IN)/(OUT OF)
IH18 TB TANK (IN)/(OUT OF)

PRESENCE OF ORBITER
PRESENCE OF ORBITER

BETA ALPHA MACH
.000 .000 6.000
.000 -5.000 6.000

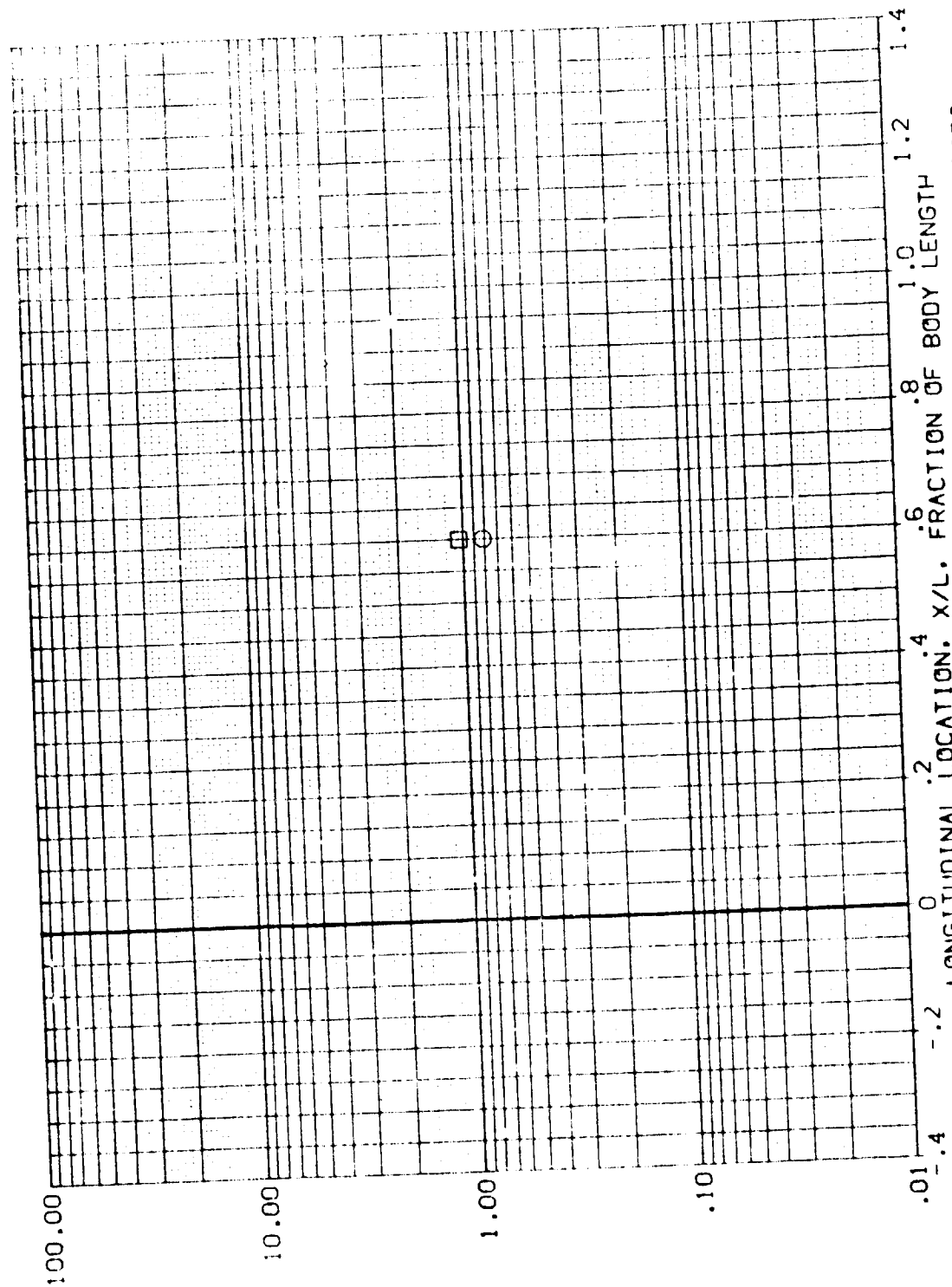


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

ORNL/L = 4.807 HAW/HT = 1.000 β -1 = 67.500

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	CH
(COMT02)	IM18 TB TANK (IN)/(OUT OF)	.000	.000	6.000
(COMT03)	IM18 TB TANK (IN)/(OUT OF)	.000	-5.000	6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

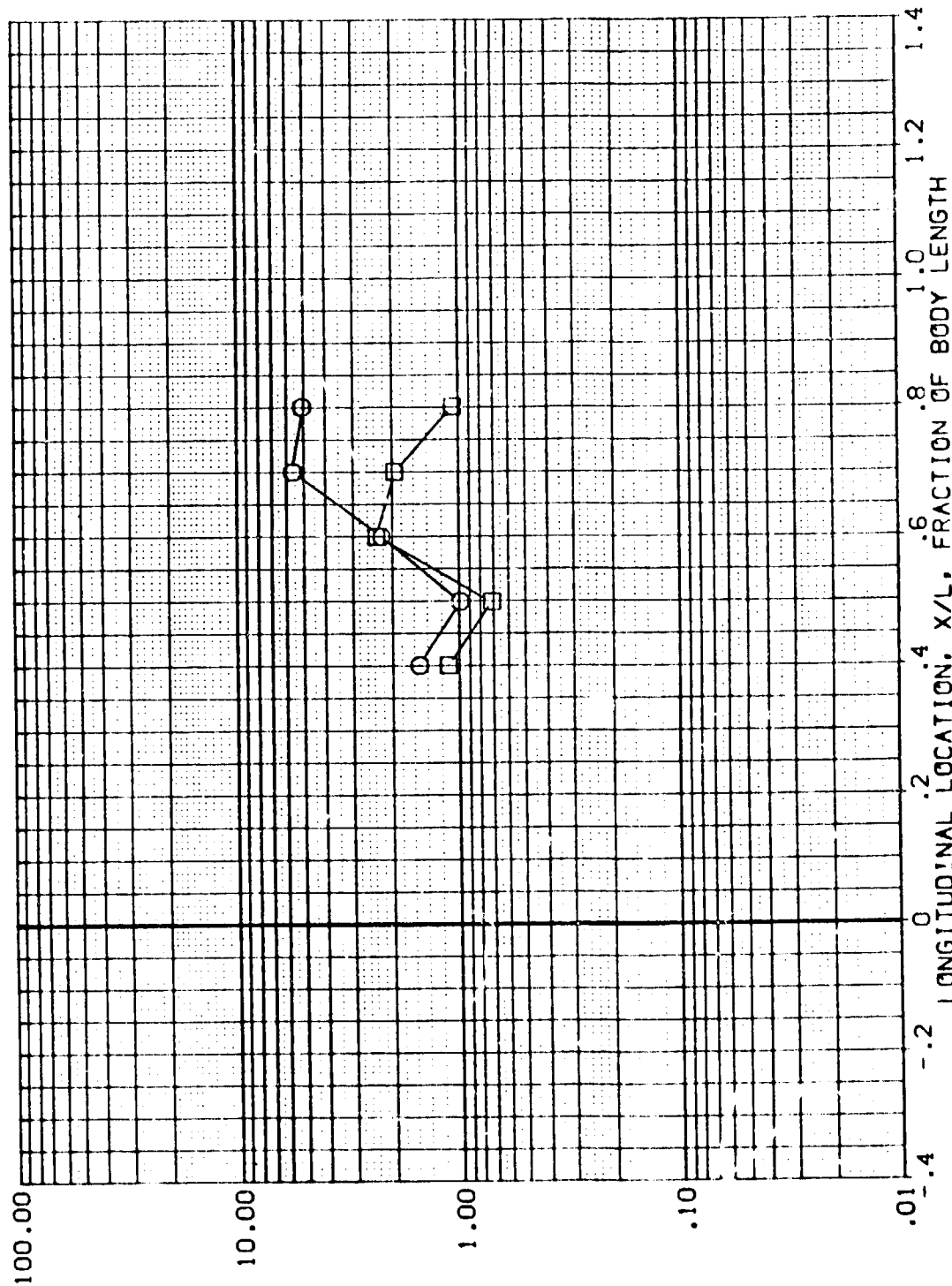


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH
(CONT02)	IH18 T8 TANK (IN)/(OUT OF)	.000	.000	5.000
(CONT03)	IH18 T8 TANK (IN)/(OUT OF)	.000	-5.000	5.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

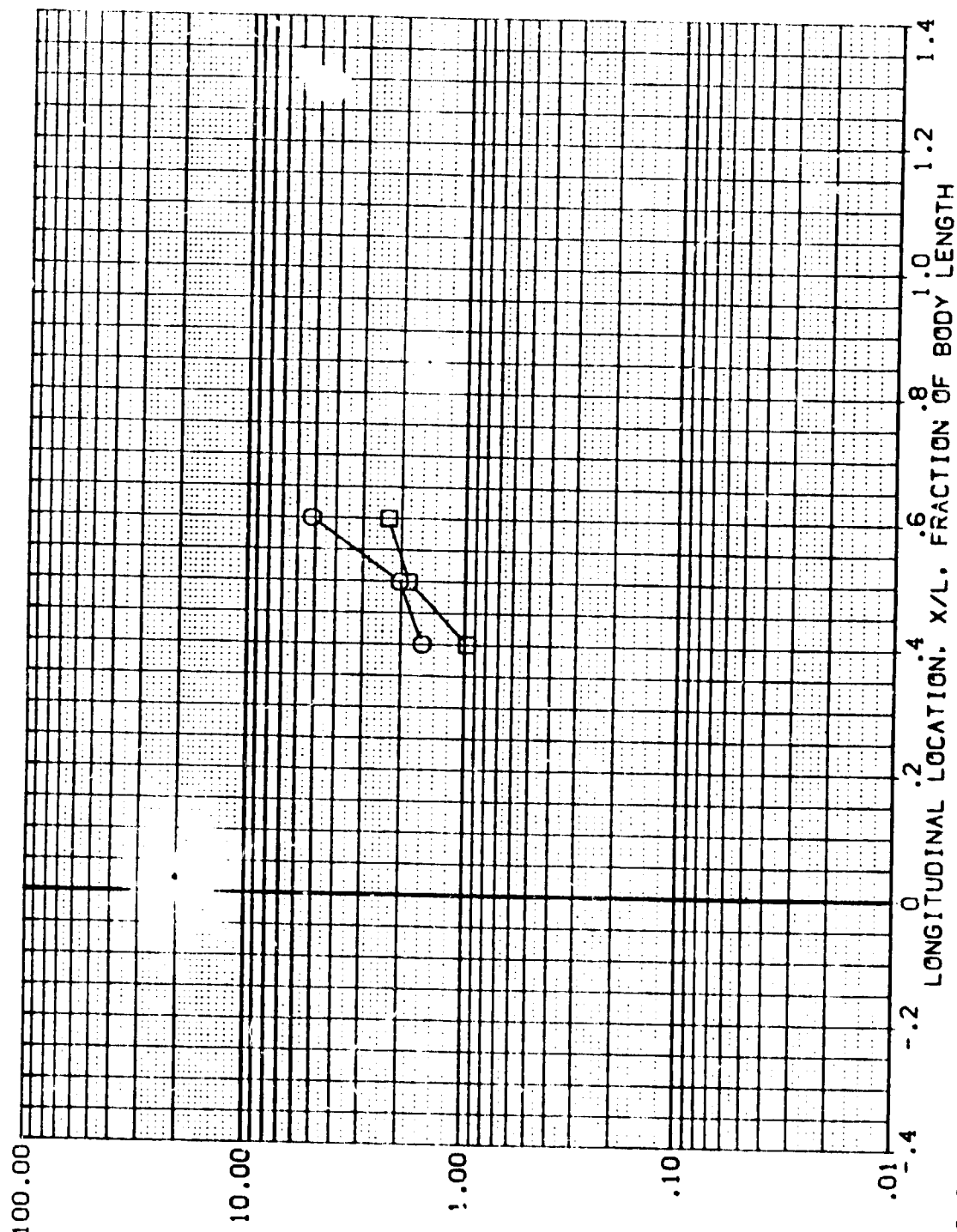


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

$GRN/L = 4.807$ $HAW/HT = 1.000$ $PHI = 112.500$

BETA	ALPHA	MACH
.000	.000	5.000
.000	-5.000	5.000

BATTION OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF. HI/HU

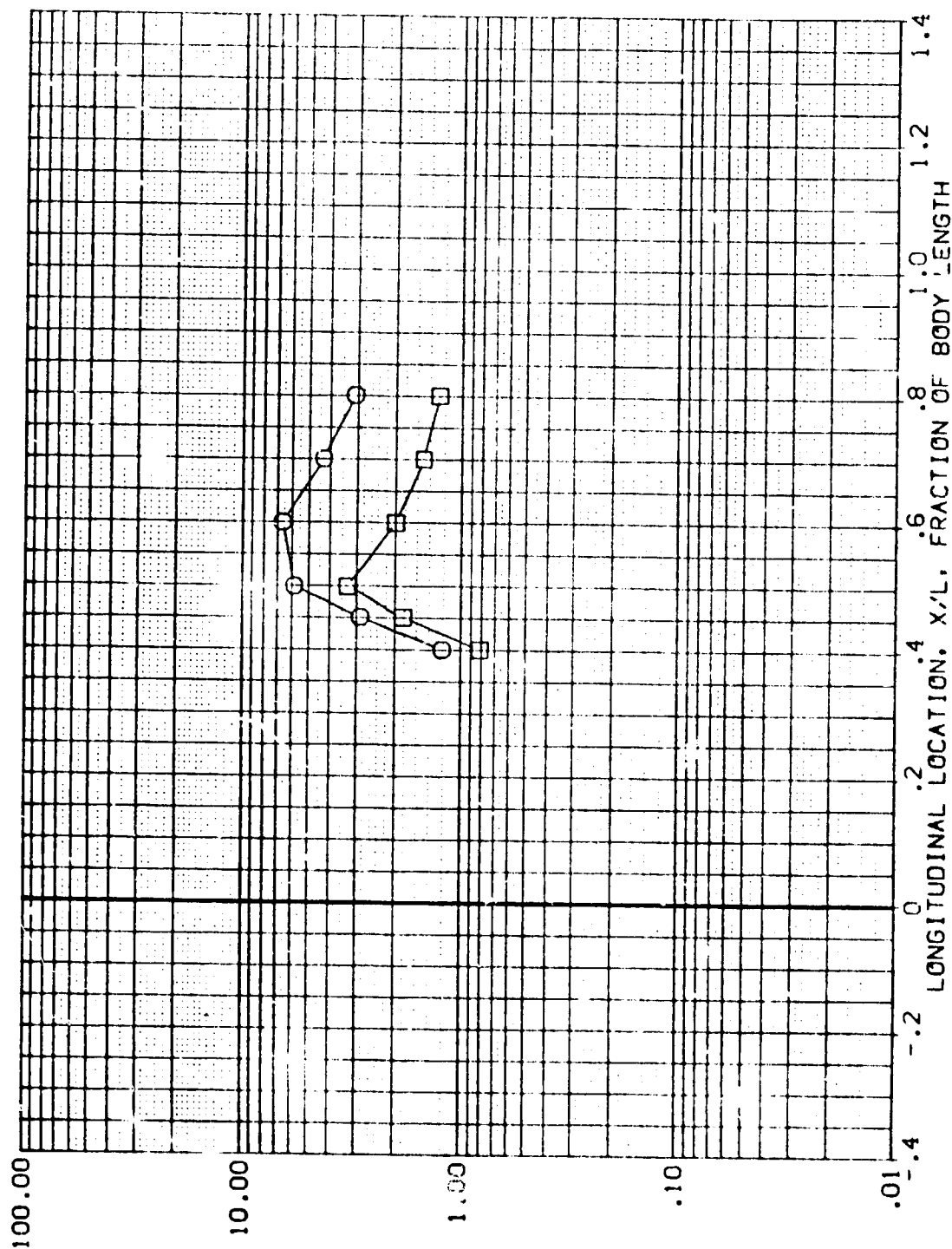


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

$$\frac{C_{RN}}{L} = 4.807 \quad HAW/HT = 1.000 \quad PHI = 135.000$$

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (COMT02) IHI8 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER ALPHA MACH
 (COMT03) IHI8 T8 TANK (IN)/(OUT OF) PRESENCE OF ORBITER .000 .000 6.000
 .000 -5.000 6.000

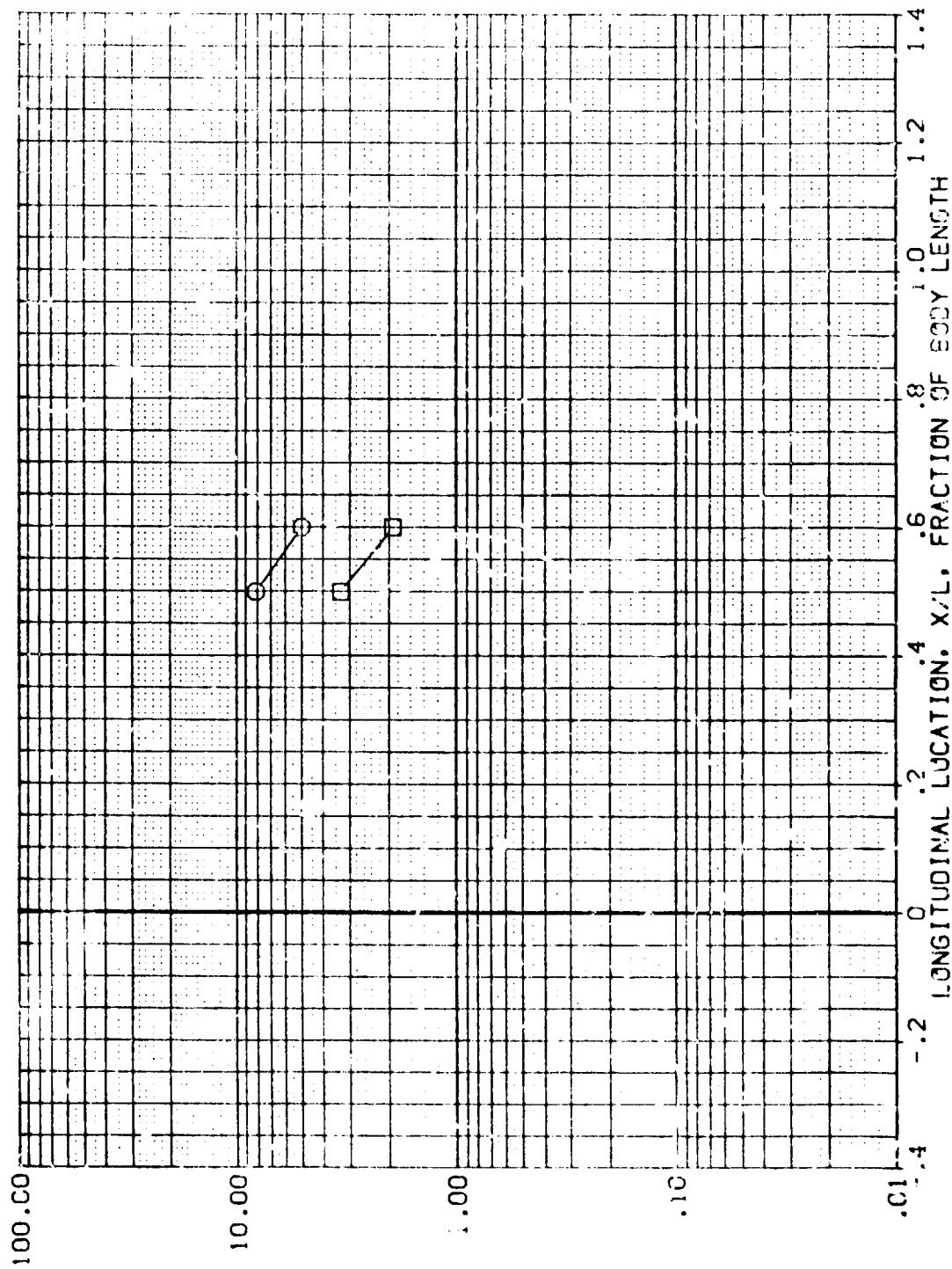


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

GRN/L = 4.807 HAW/HT = 1.000 PHI = 157.500

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CUM102) IM18 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER
 (CUM103) IM19 TB TANK (IN)/(OUT OF) PRESENCE OF ORBITER

BETA ALPHA MACH
 .000 .000 5.000
 .000 -5.000 6.000

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

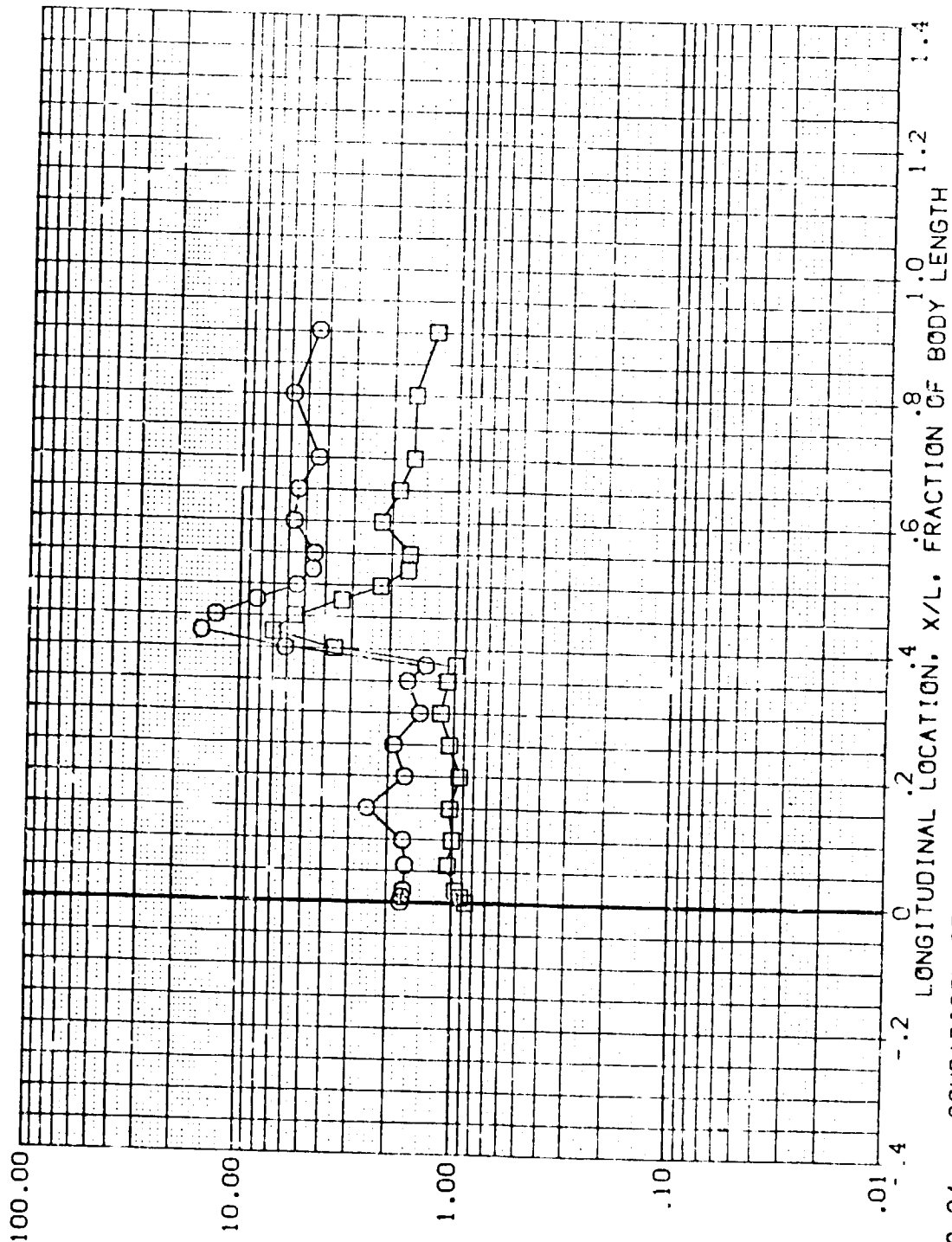


FIG 34 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - NO TRIPS

ORNL/L = 4.807 HAW/HT = 1.000 PHI = 180.000

REPRODUCIBILITY OF THE
 ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-INT
 (CONT12) (H1B 18X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 .000 6.000 .03
 (CONT13) (H1B 18X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 -5.000 6.000 .03)

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

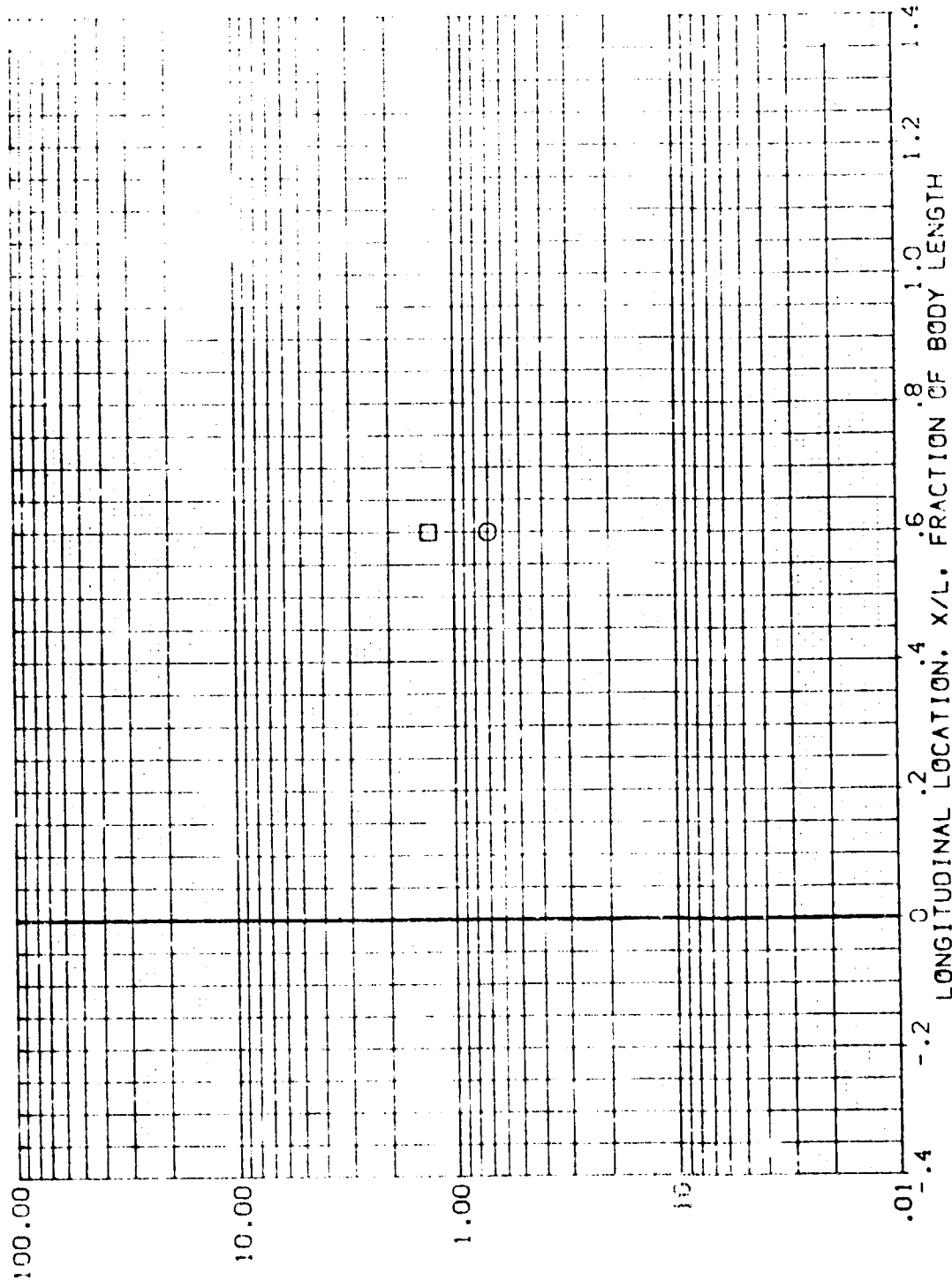


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

Reyn/L = 4.643 HAW/HT = .850 PHI = 67.500 PAGE 530

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(CONT12) [H18 T8X26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR .000 .000 6.000 .031

(CONT19) [H18 T8X26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR .000 -5.000 6.000 .031

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

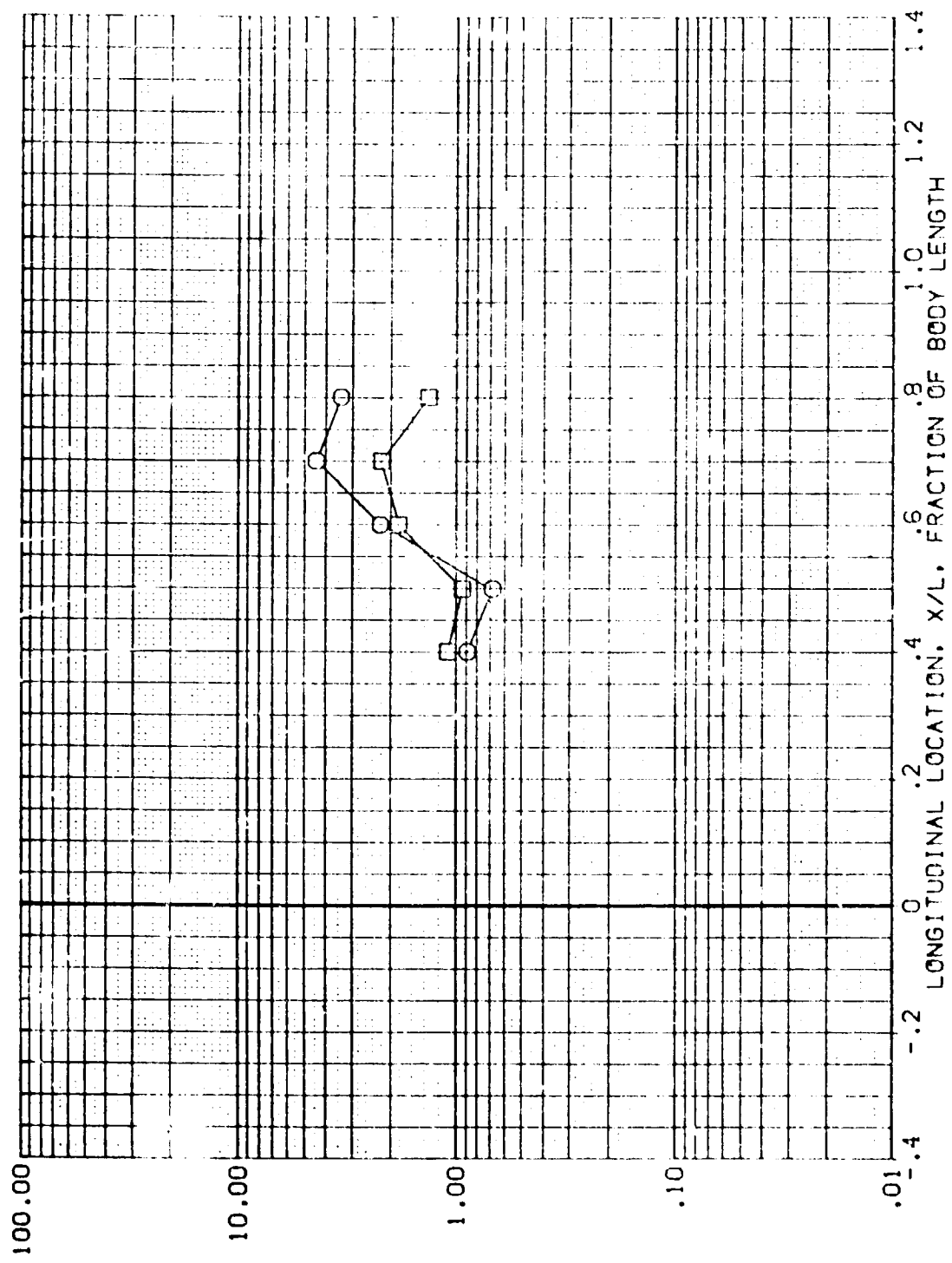


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HEIGHT

(CONT12) 2

PHI8 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR

.000 .000 6.000 .031

(CONT19)

PHI8 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR

.000 .000 6.000 .031

COMPARISON OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

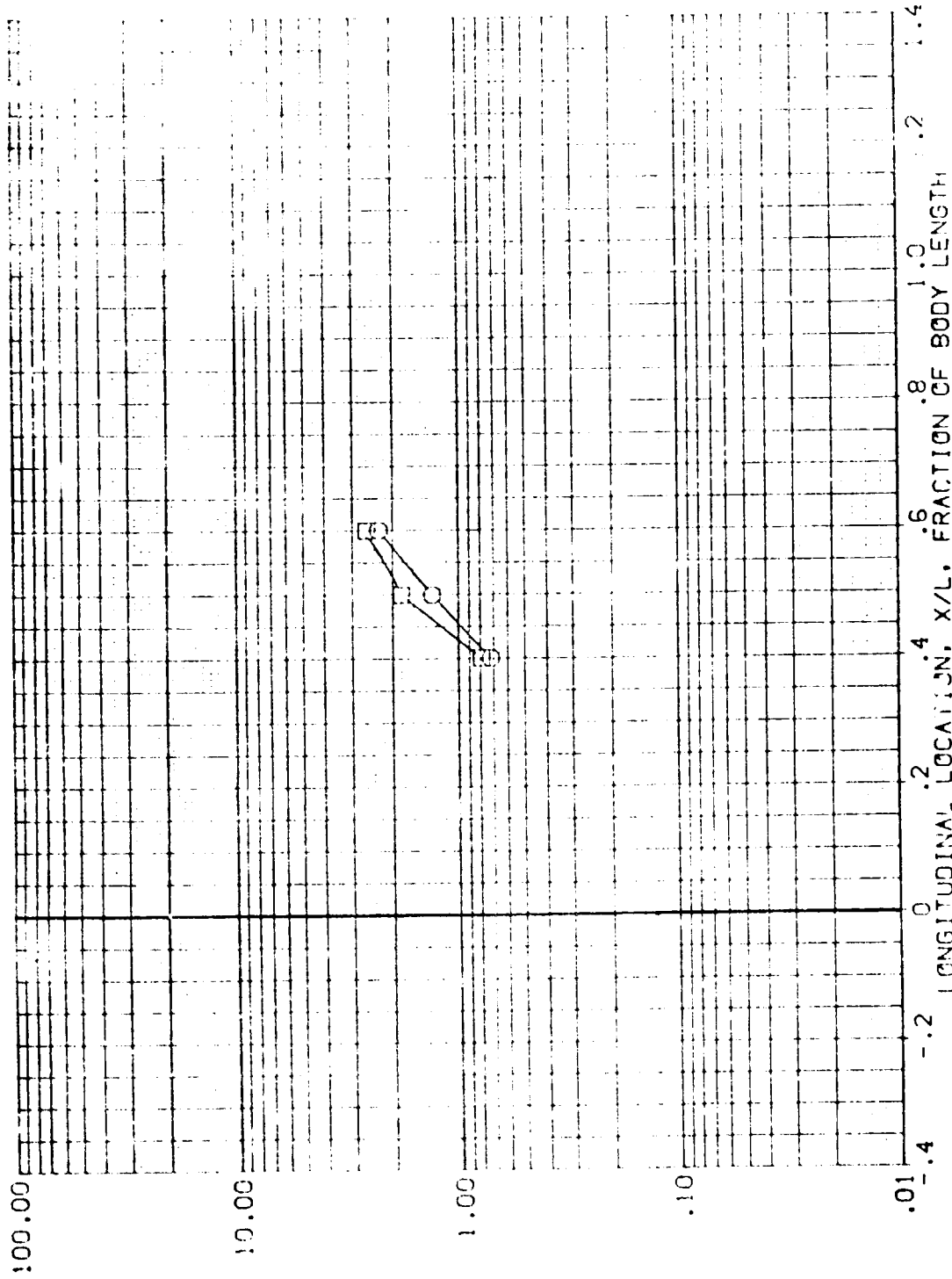


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

GRN/L = 4.643 HAW/HI = .850 PHI = 112.500 PAGE 532

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(CONT12) [H:8 TBX26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR .000 .000 6.000 .031

(CONT19) [H:8 TBX26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR .000 -5.000 6.000 .031

RATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

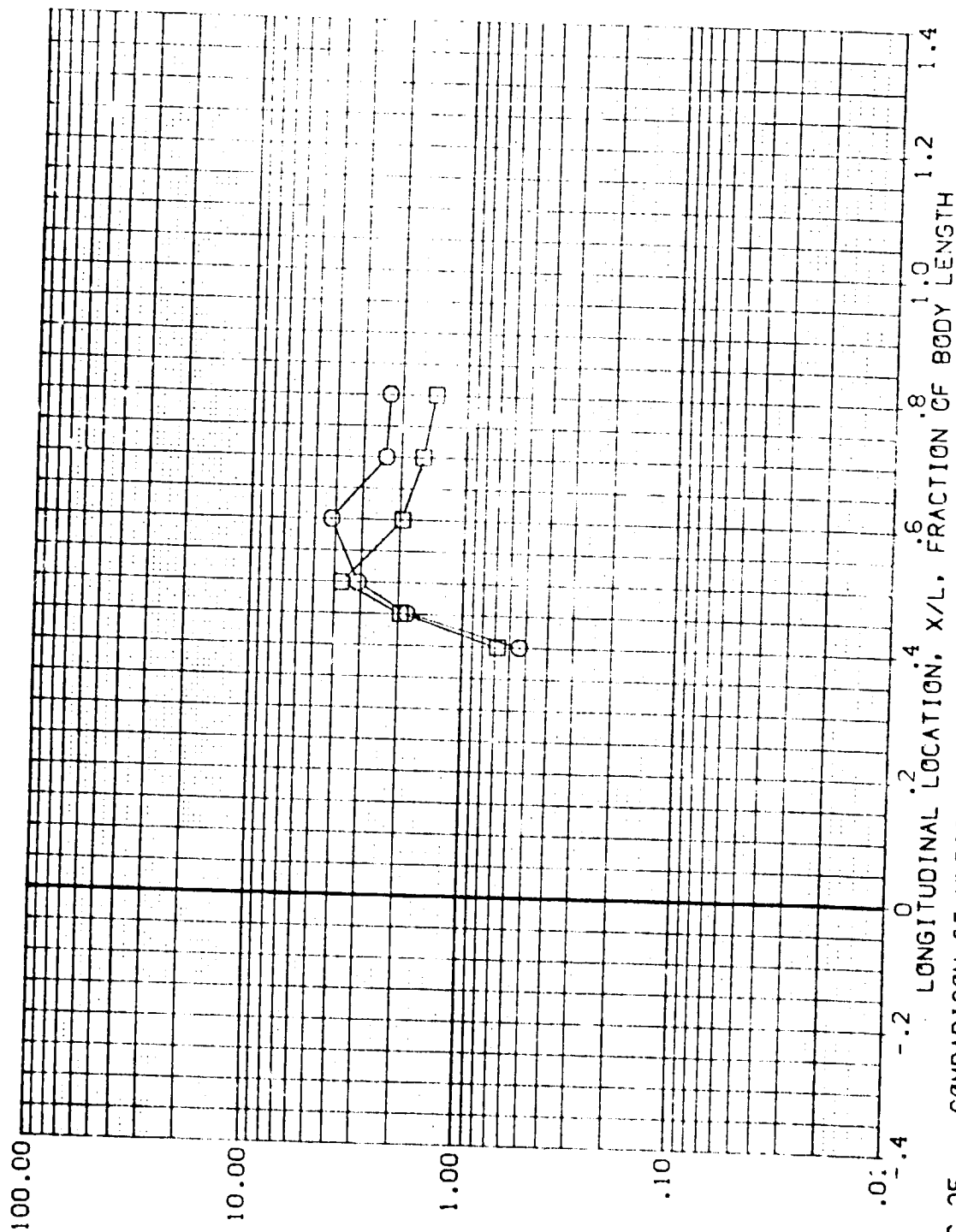


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

$Re_N/L = 4.643$ $h_{AW}/h_T = .850$ $\phi = 135.000$

DATA SET SYMBOL
(CONT12)
(CONT15)

CONFIGURATION DESCRIPTION
IH18 18X26 TANK (IN)/ET (CF)
IH18 18X26 TANK (IN)/ET (CF)

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
5.000

X-HT
.031
.031

COMPARISON OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF. H1/HU

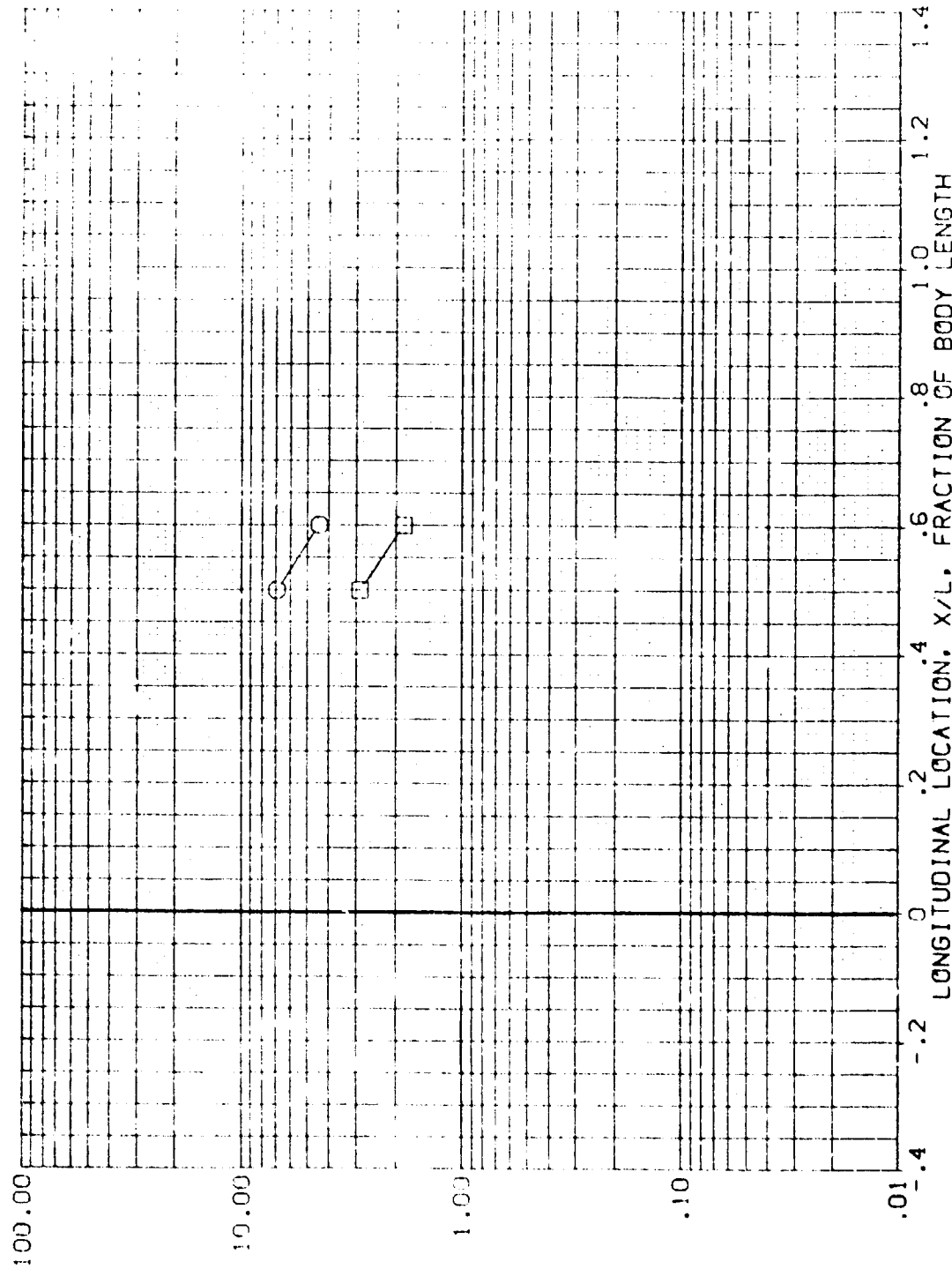


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

PRN/L = 4.643 FAW/HT = .850 PHI = 157.500 PAGE 534

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CONT12) 8 IH18 TBX26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR
 (CONT19) 8 IH18 TBX26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR

BETA ALPHA MACH X-HT
 .000 .000 6.000 .031
 .000 -5.000 6.000 .031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

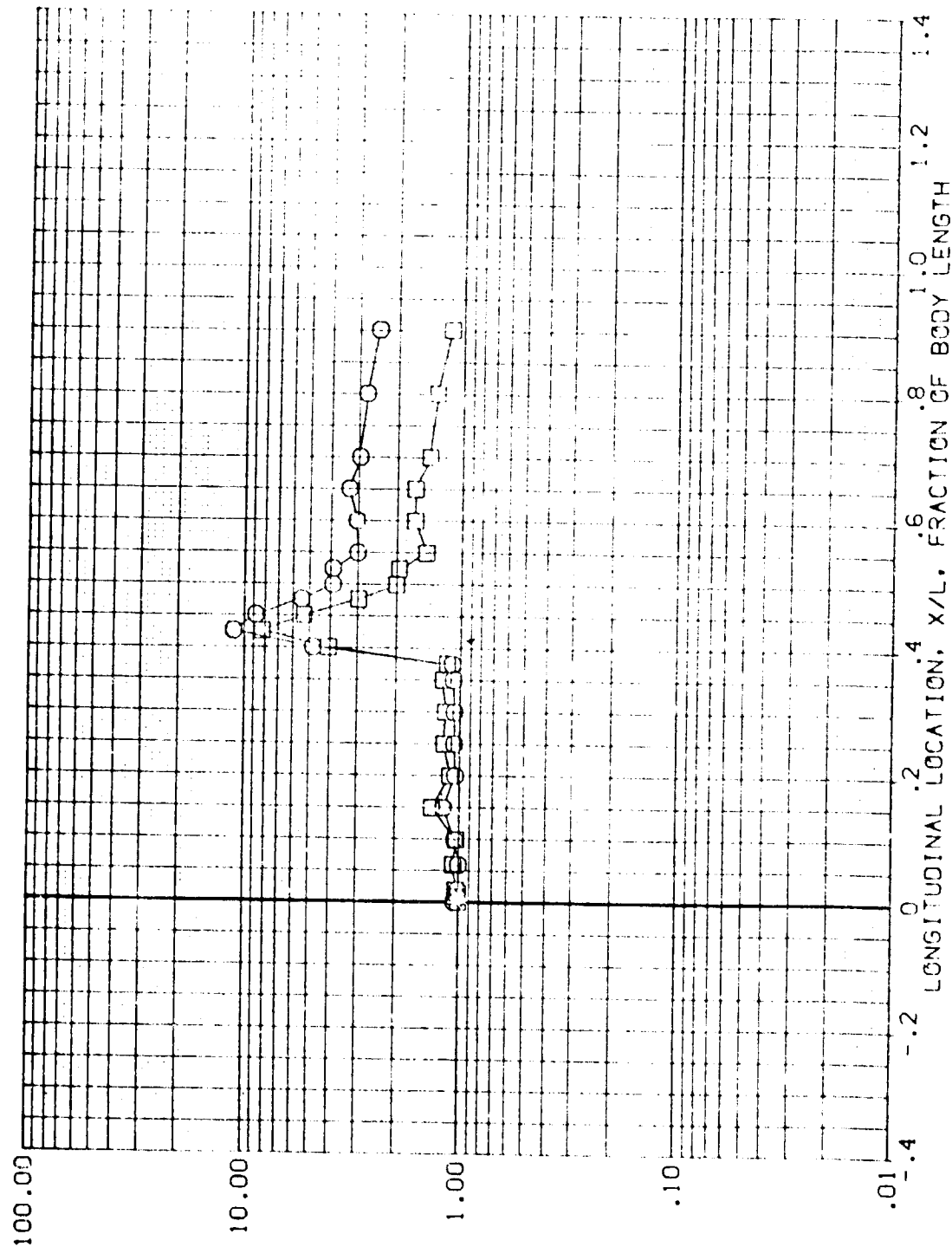


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

$Re_{N/L} = 4.643$ $H/W/HT = .850$ $PHI = 190.000$

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-HT

(COMT12) 8 IH18 TBX26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 .000 6.000 .031

(COMT19) IH18 TBX26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 -5.000 6.000 .031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., HI/HU

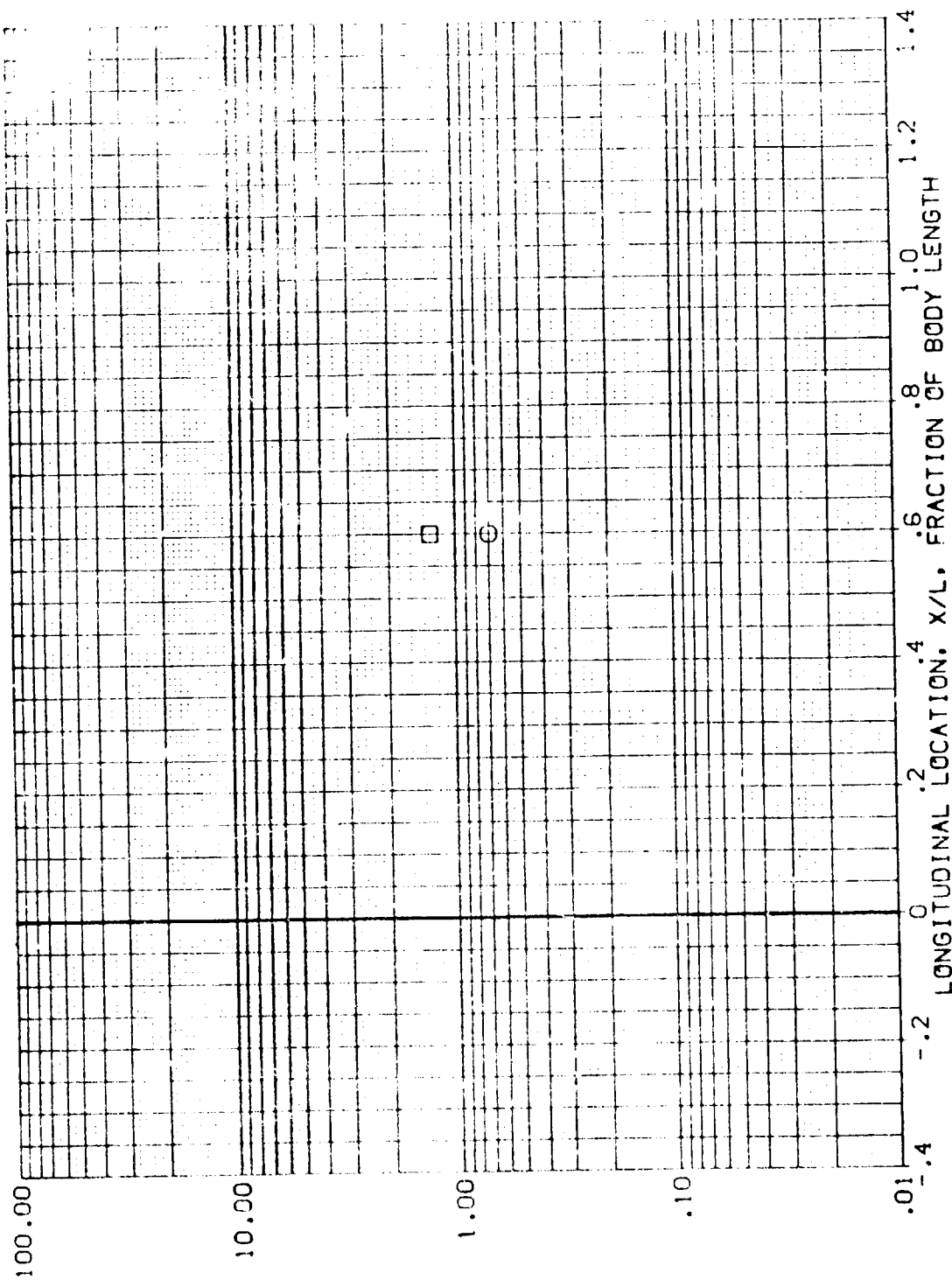


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

ORN/L = 4.643 HAW/HU = 1.000 PHI = 67.500 PAGE 536

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CONT12) [H18 T8X26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR
 (CONT19) [H18 T8X26 TANK (IN)/(OUT OF)] PRESENCE OF ORBITR

BETA .000 ALPHA .000 MACH 6.000 X-HT .031
 .000 -5.000 6.000 .031

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

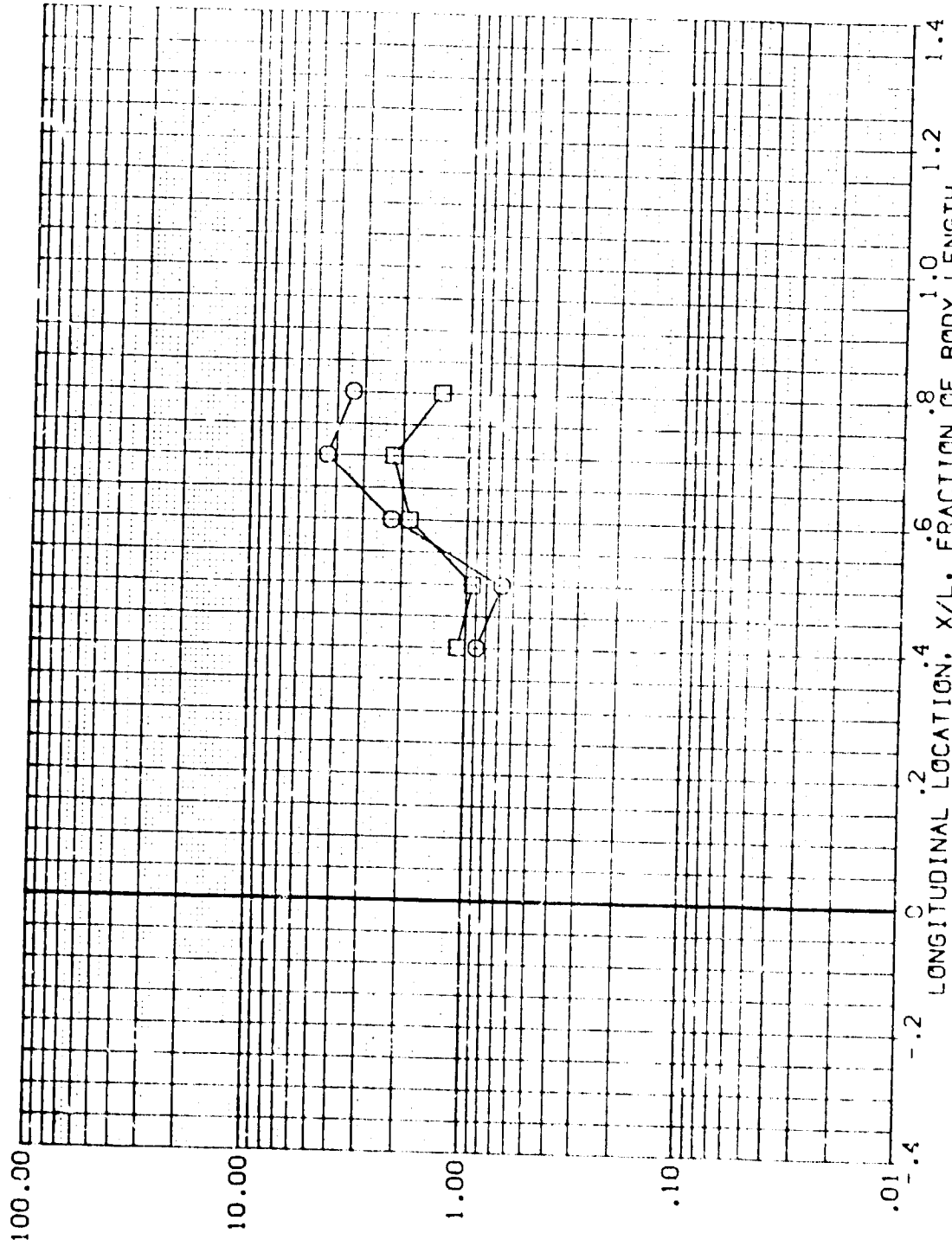


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

$Re_{N/L} = 4.643$ $h_{AW}/h_T = 1.000$ $\phi = 90.000$

DATA SET SYMBOL (CONT12) (CONT19) 8

CONFIGURATION DESCRIPTION	BETA	ALPHA	MACH	X-HT
[H18 TBX25 TANK (IN)]/(OUT OF)	.000	.000	6.000	.031
[H18 TBX26 TANK (IN)]/(OUT OF)	.000	-5.000	6.000	.031

ATIO OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEF., HI/HU

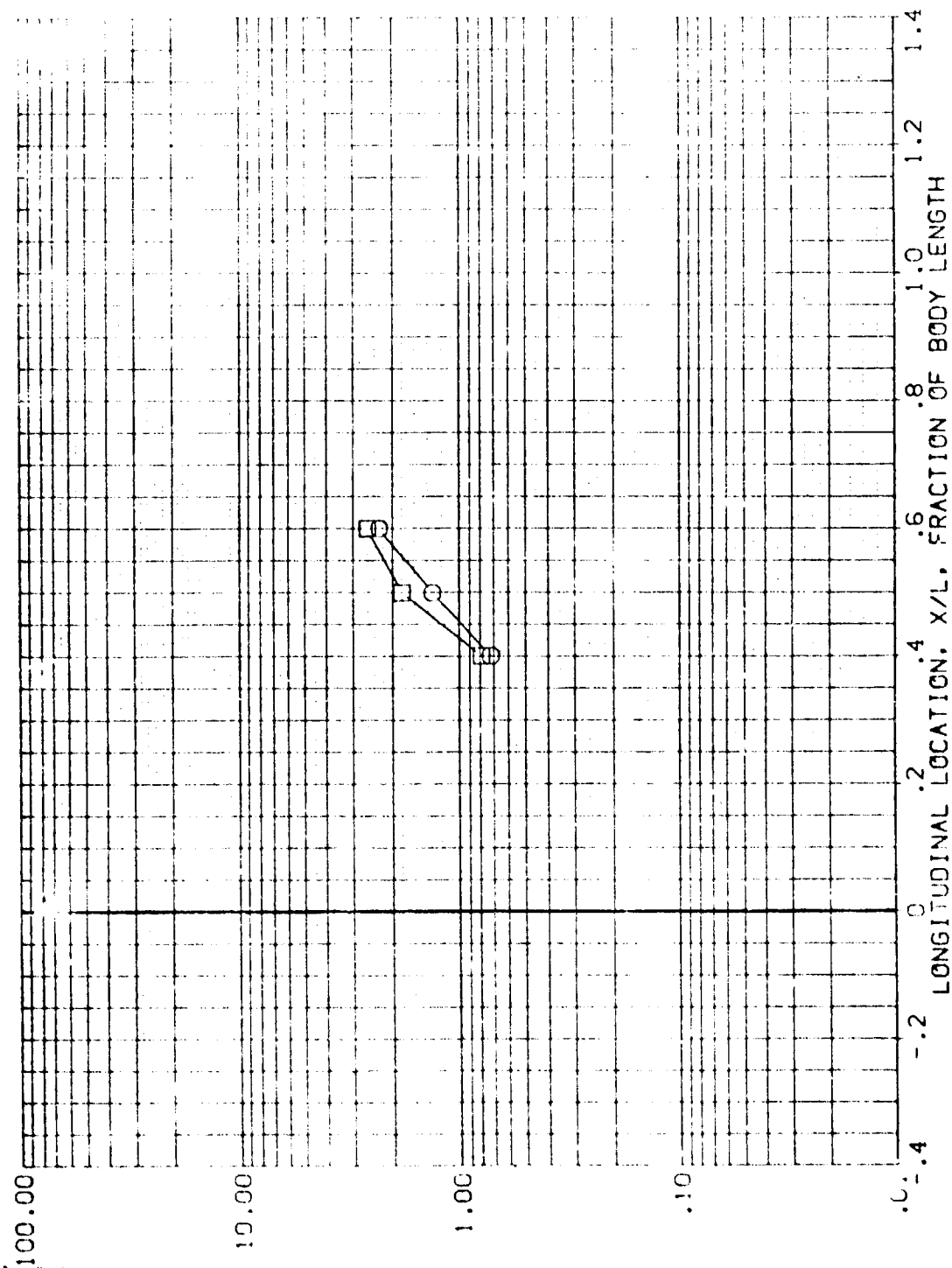


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

GRN/L = 4.643 HAW/HT = 1.000 PHI = 112.500

DATA SET SYMBOL
(CONT12)
(CONT19)

CONFIGURATION DESCRIPTION
IH18 TBX26 TANK (IN)/(OUT OF)
IH18 TBX26 TANK (IN)/(OUT OF)

PRESENCE OF ORBITR
PRESENCE OF ORBITR

BETA .000 .000
ALPHA .000 -5.000
MACH 6.000 6.000
X-H. .031 .031

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u

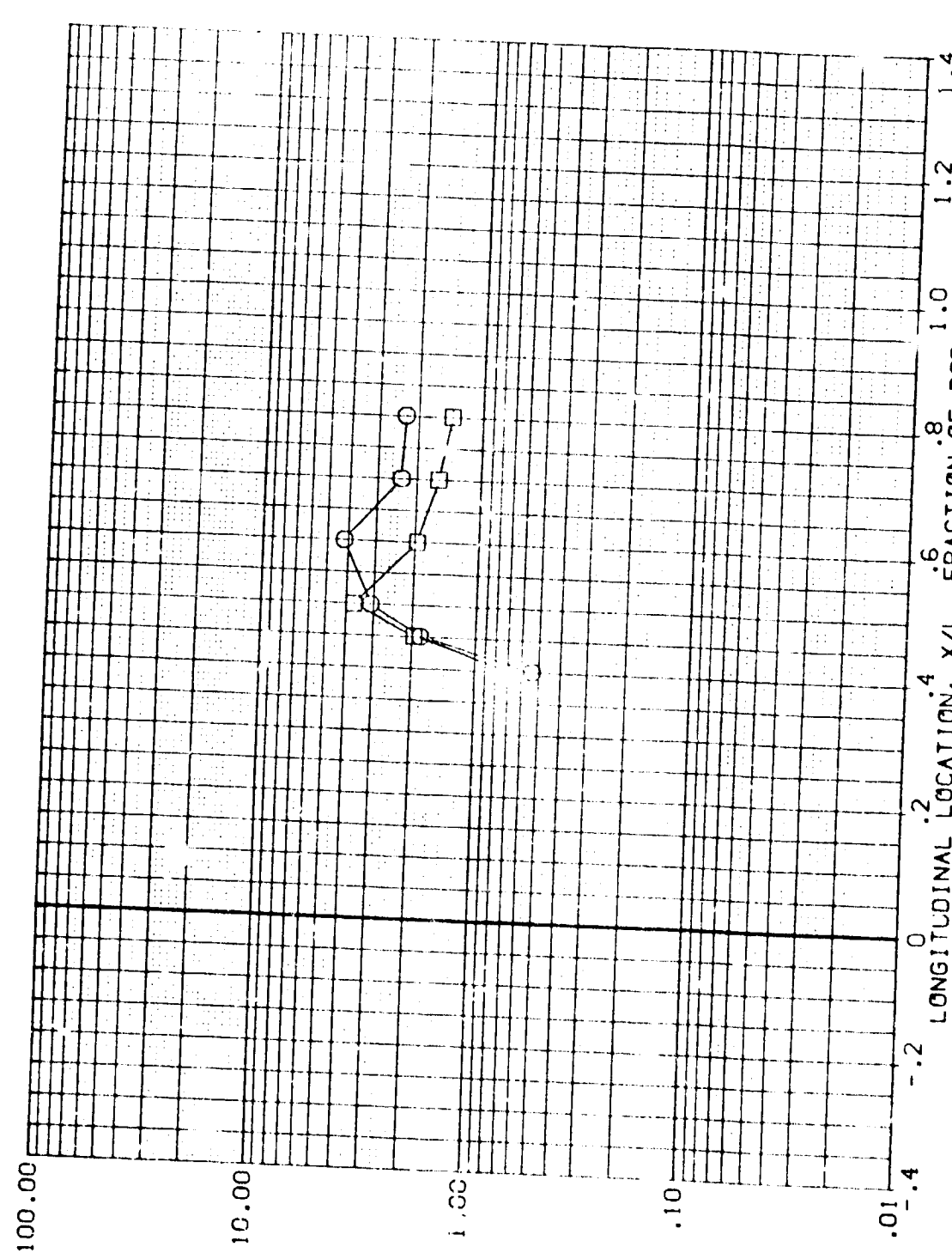


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

$Re_{DN}/L = 4.643$ $h_{AW}/h_T = 1.000$ $PHI = 135.000$

COMPARISON OF LOCAL INTERFERENCE TO UNDISTURBED HEAT TRANSFER COEFF., h_i/h_u

DATA SET SYMBOL (CONT19) 8

CONFIGURATION DESCRIPTION
IM18 TBX26 TANK (IN)/(OUT OF)
IM18 TBX26 TANK (IN)/(OUT OF)

PRESENCE OF ORBITR
PRESENCE OF ORBITR

BETA
.000
.000

ALPHA
.000
-5.000

MACH
6.000
6.000

X-HT
.031
.031

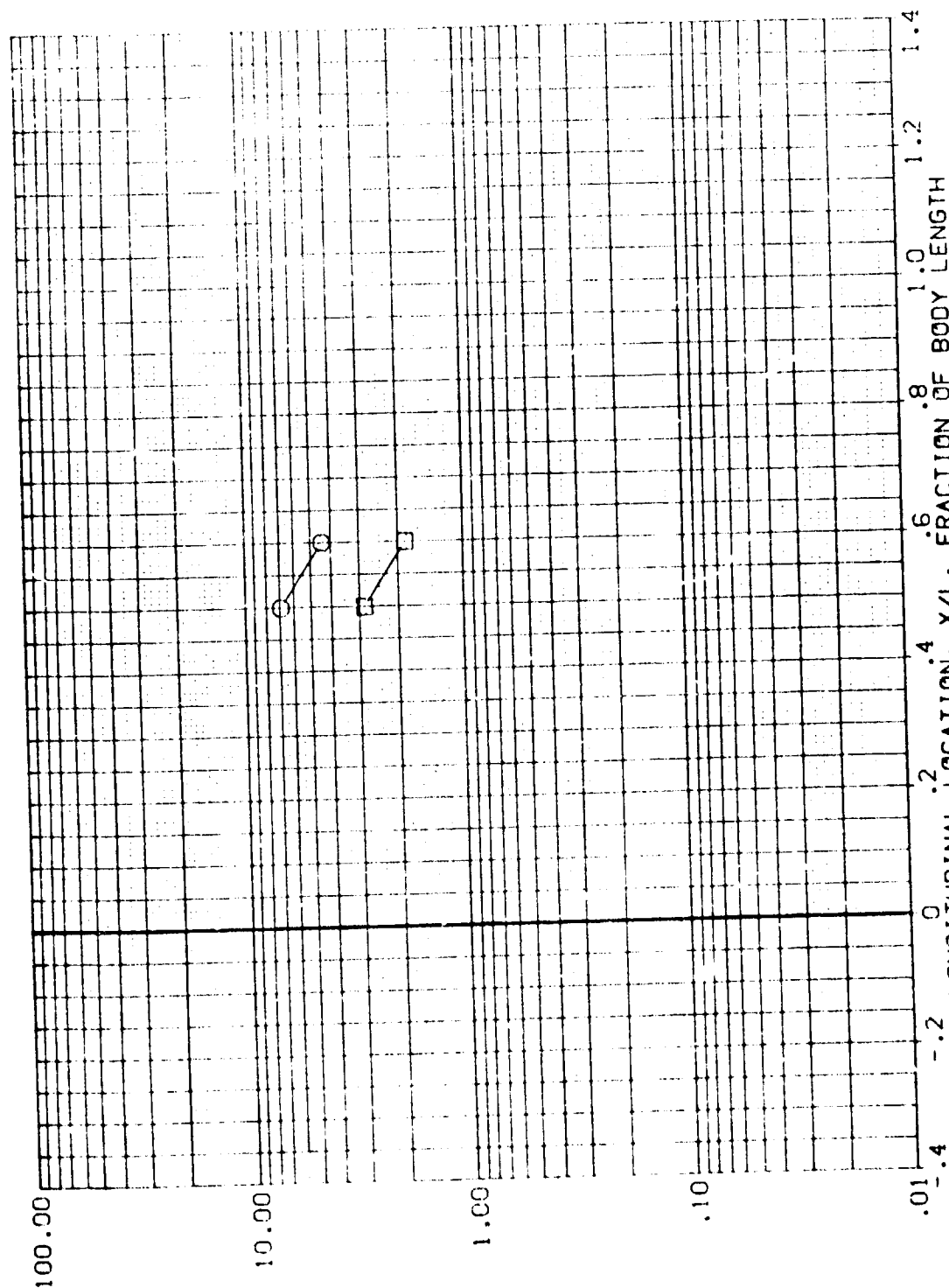


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

$Re_N/L = 4.643$ $h_{AW}/h_T = 1.000$ $PHI = 157.500$ PAGE 540

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ALPHA MACH X-H7

(CONT12) 8 IM18 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 .000 6.000 .031

(CONT19) 8 IM18 T8X26 TANK (IN)/(OUT OF) PRESENCE OF ORBITR .000 -5.000 6.000 .031

Ratio of Local Interference to Undisturbed Heat Transfer Coeff., h_i/h_u $Re_{N/L} = 4.643$ $HAW/HT = 1.000$ $\Phi = 180.000$

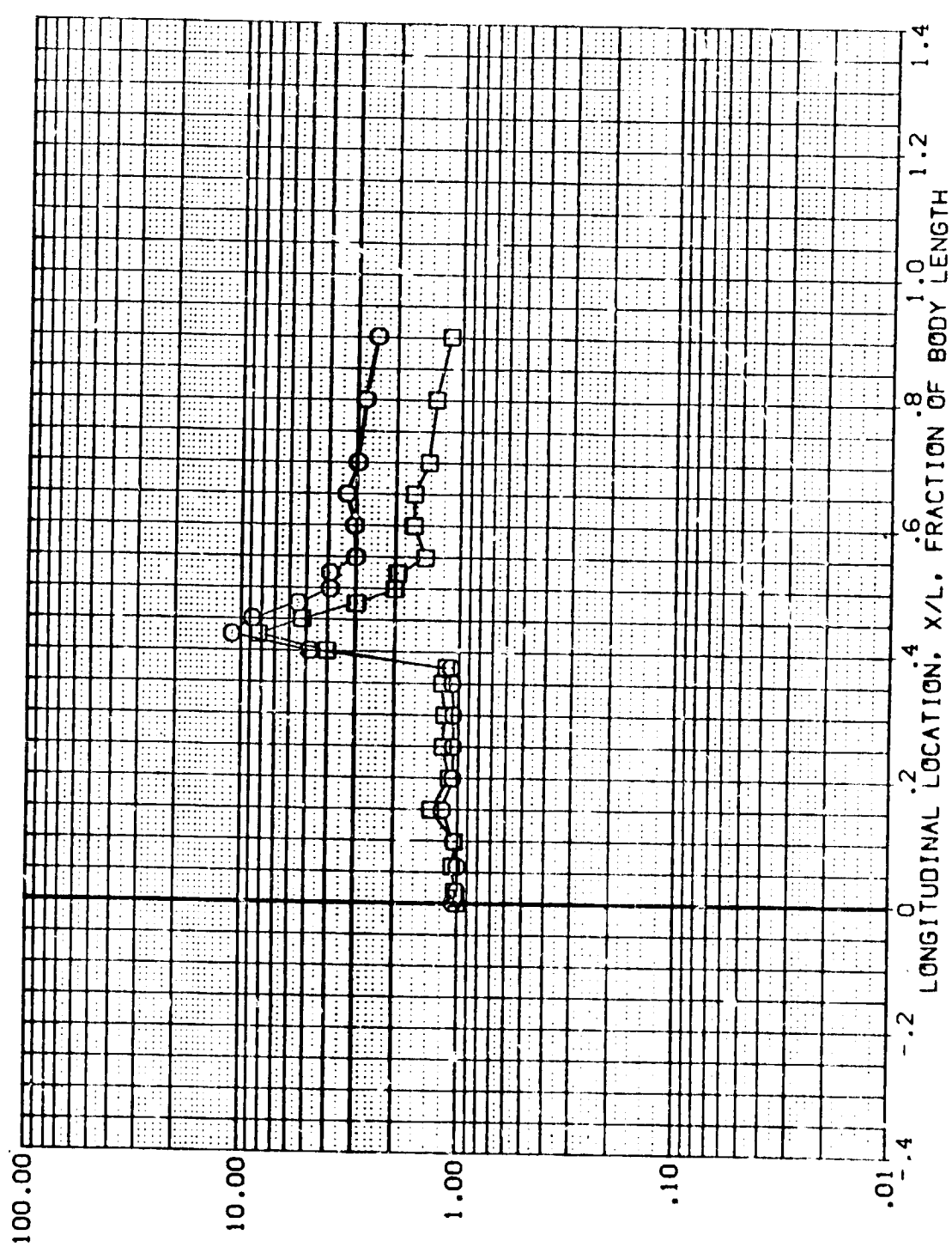


FIG 35 COMPARISON OF UNDISTURBED AND INTERFERENCE DATA - ET - SMALL TRIPS

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

APPENDIX
TABULATED SOURCE DATA

Tabulations of plotted data are available on request from
Data Management Services

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

1H18 B10C5D7M87M3F4V5 Y8 ORBITER FUSELAGE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH = .1750

TEST CONDITIONS

TEST DATA

BOTTOM OF FUSELAGE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH = .1750

TEST CONDITIONS

TEST DATA

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
97	6.100	4.778	.0000	.0000	3070.	1290.	2536.	2.960

RUN NUMBER	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
97	.87500-01	7.0000	.1920	.2325	.2600	.4574-02	.8780-03	.6492	538.9	78.90
97	.10000+00	8.0000	.1778	.2153	.2406	.4573-02	.8130-03	.6025	537.7	77.74
97	.12500	9.0000	.1334	.1616	.1806	.4574-02	.6100-03	.4510	539.3	79.33
97	.15000	10.000	.9081-01	.1099	.1227	.4570-02	.4150-03	.3088	535.0	75.02
97	.17500	11.000	.6172-01	.7463-01	.8335-01	.4569-02	.2820-03	.2103	533.6	73.65
97	.20000	12.000	.9713-01	.1175	.1313	.4571-02	.4440-03	.3301	535.8	75.85
97	.25000	13.000	.2408	.2919	.3266	.4577-02	.1102-02	.8111	542.4	82.41
97	.30000	14.000	.2221	.2691	.3010	.4575-02	.1016-02	.7499	540.4	80.44
97	.40000	15.600	.1474	.1785	.1995	.4573-02	.9210-03	.4991	538.0	78.02
97	.50000	16.000	.1795	.2175	.2432	.4574-02	.8650-03	.6356	539.6	79.60
97	.60000	17.000	.1891	.2291	.2561	.4574-02	.8650-03	.6356	539.2	79.16
97	.70000	18.000	.1756	.2130	.2383	.4578-02	.6040-03	.5914	542.8	82.84
97	.80000	19.000	.1553	.1880	.2102	.4573-02	.7100-03	.5259	538.0	78.01
97	.90000	20.000	.8993-01	.1088	.1216	.4570-02	.4110-03	.3053	534.7	74.74
97	1.0000	21.000	.2890-01	.3492-01	.3699-01	.4568-02	.1320-03	.9866-01	532.7	72.72
97	.35000	23.000	.2347	.2845	.3182	.4576-02	.1074-02	.7918	541.5	81.50
97	.37500	24.000	.2158	.2617	.2928	.4578-02	.9880-03	.7269	542.8	82.83
97	.40000	25.000	.2157	.2614	.2924	.4576-02	.9880-03	.7279	541.2	81.22
97	.50000	26.000	.2014	.2439	.2728	.4574-02	.9210-03	.6805	539.6	79.60
97	.60000	27.000	.1479	.1790	.2001	.4572-02	.6760-03	.5010	537.3	77.27
97	.70.000	29.000	.1120	.1355	.1514	.4570-02	.5120-03	.3803	535.1	75.13
97	.80000	31.000	.2825-01	.3413-01	.3810-01	.4567-02	.1290-03	.9655-01	532.2	72.20

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 3

BOTTOM OF FUSELAGE

IH18 B10C5D7487M3F4V5 T8 X26 ORBITER FUSELAGE

(RQMB05)

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-HT = .4700-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
101	6.110	4.700	-5.000	.0000	3080.	1295.	2636.	3.029

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/R FT2SEC	TAW DEG. R	TCAL DEG. F
101	.00000	.87500-01	7.0000	.2900	.3141	.3344	.4647-02	.1301-02	1.552	550.5	90.48
101	.00000	.10000+00	8.0000	.2308	.2588	.2756	.4645-02	.1072-02	1.281	548.9	88.89
101	.00000	.12500	9.0000	.1465	.1643	.1749	.4641-02	.6800-03	.8154	544.9	84.88
101	.00000	.15000	10.000	.1082	.1213	.1291	.4638-02	.5020-03	.6029	541.5	81.54
101	.00000	.17500	11.000	.1398	.1567	.1669	.4643-02	.6490-03	.7766	547.3	87.26
101	.00000	.20000	12.000	.2306	.2587	.2756	.4649-02	.1072-02	1.276	553.1	93.08
101	.00000	.25000	13.000	.2281	.2559	.2725	.4648-02	.1060-02	1.264	551.7	91.66
101	.00000	.30000	14.000	.2226	.2370	.2511	.4646-02	.9220-03	1.100	549.8	89.83
101	.00000	.40000	15.000	.2102	.2358	.2596	.4648-02	.9770-03	1.165	551.6	91.58
101	.00000	.50000	16.000	.2173	.2438	.2596	.4647-02	.1010-02	1.205	550.9	90.87
101	.00000	.60000	17.000	.1132	.1269	.1350	.4639-02	.5250-03	.6301	542.4	82.40
101	.00000	.70000	18.000	.1642	.1841	.1959	.4642-02	.7620-03	.9124	545.9	85.93
101	.00000	.80000	19.000	.1267	.1420	.1512	.4640-02	.5880-03	.7060	543.7	83.70
101	.00000	.90000	20.000	.6622-01	.7419-01	.7894-01	.4636-02	.3070-03	.3702	539.2	79.22
101	.00000	1.0000	21.000	.1813-01	.2032-01	.2163-01	.4632-02	.8400-04	1.011	535.4	75.40
101	70.000	.35000	23.000	.1817	.2038	.2170	.4644-02	.8440-03	1.009	548.2	88.23
101	70.000	.37500	24.000	.1701	.1907	.2031	.4645-02	.7300-03	.9442	549.1	89.13
101	70.000	.40000	25.000	.1867	.2094	.2223	.4644-02	.7300-03	.9442	549.1	89.13
101	70.000	.50000	26.000	.1656	.1857	.1977	.4644-02	.8570-03	1.037	547.9	87.86
101	70.000	.60000	27.000	.1556	.1857	.1977	.4643-02	.7690-03	.9206	546.7	86.68
101	70.000	.80000	29.000	.1228	.1377	.1466	.4640-02	.5700-03	.6843	543.5	83.46
101	70.000	1.0000	31.000	.8411-01	.9426-01	1.003	.4637-02	.3900-03	.4690	540.7	80.71
101	70.000			.5715-02	.1087-01	.1156-01	.4632-02	.4500-04	.5489-01	535.3	75.33

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 4

IH18 B10C5D7H87M3F4V5

ORBITER FUSELAGE

(R0MB07)

BOTTOM OF FUSELAGE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI
103	6.200	5.315	.0000	.0000	2970.	1220.	2.968

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
103	.50000	.87500-01	7.0000	.1553	.1741	.1853	.4469-02	.6940-03	.7841	538.9	78.86
103	.00000	.10000-80	8.0000	.1457	.1633	.1738	.4468-02	.6510-03	.7365	538.0	77.95
103	.00000	.12500	9.0000	.1026	.1149	.1223	.4466-02	.4580-03	.5184	536.4	76.38
103	.00000	.15000	10.000	.7704-01	.8632-01	.9186-01	.4465-02	.3440-03	.3902	535.2	75.21
103	.00000	.17500	11.000	.6541-01	.7329-01	.7799-01	.4464-02	.2920-03	.3313	534.5	74.55
103	.00000	.20000	12.000	.6162-01	.6903-01	.7344-01	.4463-02	.2750-03	.3124	533.4	73.37
103	.00000	.25000	13.000	.5736-01	.6427-01	.6839-01	.4462-02	.2560-03	.2904	532.9	72.88
103	.00000	.30000	14.000	.5043-01	.5651-01	.6013-01	.4462-02	.2100-03	.2387	532.7	72.71
103	.00000	.40000	15.000	.4736-01	.5272-01	.5609-01	.4462-02	.1990-03	.2263	532.9	72.88
103	.00000	.50000	16.000	.4460-01	.4996-01	.5313-01	.4462-02	.1590-03	.1804	531.8	71.78
103	.00000	.60000	17.000	.2100-08	.2352-08	.2503-08	.4461-02	.1110-03	.1263	531.7	71.72
103	.00000	.70000	18.000	.3554-01	.3994-01	.4249-01	.4460-02	.1170-03	.1330	531.4	72.53
103	.00000	.80000	19.000	.2443-01	.2736-01	.2910-01	.4464-02	.3340-03	.3787	534.5	74.53
103	.00000	.90000	20.000	.2438-01	.2786-01	.2964-01	.4466-02	.3630-03	.4107	536.6	76.57
103	.00000	1.0000	21.000	.2623-01	.2939-01	.3127-01	.4465-02	.3940-03	.4349	535.7	75.71
103	.00000	.35000	23.000	.7482-01	.8394-01	.8921-01	.4465-02	.3580-03	.4057	535.7	75.70
103	.00000	.37500	24.000	.8128-01	.9110-01	.9696-01	.4464-02	.3510-03	.3982	534.3	74.32
103	.00000	.40000	25.000	.8600-01	.9639-01	.1026	.4465-02	.2100-03	.2390	532.5	72.54
103	.00000	.50000	26.000	.8018-01	.8995-01	.9561-01	.4465-02	.1400-03	.1596	531.2	71.23
103	.00000	.60000	27.000	.7863-01	.8310-01	.8375-01	.4464-02				
103	.00000	.80000	29.000	.4706-01	.5271-01	.5608-01	.4462-02				
103	.00000	1.0000	31.000	.3139-01	.3515-01	.3739-01	.4460-02				

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 5

(ROM808)

BOTTOM OF FUSELAGE

IH18 810CSD748743F4V5 ORBITER FUSELAGE

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	P70 PSI
104	6.120	4.583	-5.000	.0000	3055.	1283.	2550.	2.923

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
104	.00000	.87500-01	7.0000	.1892	.2295	.2571	.4539-02	.8580-03	.6237	544.2	84.16
104	.00000	.10000+00	8.0000	.1588	.1928	.2159	.4539-02	.7210-03	.5251	543.6	83.59
104	.00000	.12500	9.0000	.1089	.1321	.1479	.4537-02	.4940-03	.3602	542.1	82.07
104	.00000	.15000	10.000	.8838-01	.1073	.1201	.4537-02	.4010-03	.2925	541.2	81.25
104	.00000	.17500	11.000	.8131-01	.9869-01	.1105	.4538-02	.3690-03	.2689	542.6	82.63
104	.00000	.20000	12.000	.7231-01	.8767-01	.9909-01	.4535-02	.3280-03	.2401	540.3	80.25
104	.00000	.25000	13.000	.7166-01	.8693-01	.9729-01	.4535-02	.3250-03	.2375	539.6	79.65
104	.00000	.30000	14.000	.6130-01	.7432-01	.8315-01	.4535-02	.2780-03	.2035	539.9	79.56
104	.00000	.40000	15.000	.7056-01	.8557-01	.9576-01	.4535-02	.3200-03	.2340	539.9	79.94
104	.00000	.50000	16.000	.8796-01	.1057	.1194	.4535-02	.3690-03	.2915	540.6	80.60
104	.00000	.60000	17.000	.5818-01	.7059-01	.7902-01	.4538-02	.2640-03	.1926	542.6	82.62
104	.00000	.70000	18.000	.8313-01	.1008	.1129	.4535-02	.3770-03	.2754	539.9	79.91
104	.00000	.80000	19.000	.8467-01	.1027	.1149	.4535-02	.3840-03	.2810	539.7	79.73
104	.00000	.90000	20.000	.7144-01	.6555-01	.9595-01	.4535-02	.3240-03	.2369	539.3	79.30
104	.00000	1.0000	21.000	.6514-01	.6021-01	.6977-01	.4535-02	.3000-03	.2193	540.9	80.91
104	.00000	.35000	23.000	.4563-01	.6018-01	.6733-01	.4534-02	.2250-03	.1646	538.5	78.46
104	.00000	.40000	24.000	.5820-01	.7056-01	.7894-01	.4535-02	.2640-03	.1934	540.2	80.21
104	.00000	.45000	25.000	.6770-01	.8210-01	.9188-01	.4535-02	.3070-03	.2244	539.4	79.40
104	.00000	.50000	26.000	.7166-01	.8689-01	.9722-01	.4535-02	.3250-03	.2379	540.1	80.06
104	.00000	.55000	27.000	.8357-01	.1014	.1134	.4535-02	.3790-03	.2772	539.8	79.78
104	.00000	.60000	28.000	.9239-01	.1120	.1253	.4535-02	.4150-03	.3063	539.8	79.85
104	.00000	.65000	29.000	.7874-01	.9545-01	.1068	.4534-02	.3570-03	.2616	538.7	78.73

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 6

(RQMB09)

IH18 B10C507487M3F4V5 X26 ORBITER FUSELAGE

BOTTOM OF FUSELAGE

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
105	6.120	4.778	-5.000	.0000	3055.	1283.	2536.	2.928

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
105	.00000	.87500-01	7.0000	.2062	.2504	.2805	.4544-02	.9370-03	.6810	544.4	84.43
105	.00000	.10000+00	8.0000	.1719	.2087	.2337	.4543-02	.7810-03	.5683	544.0	84.01
105	.00000	.12500	9.0000	.9463-01	.1149	.1287	.4544-02	.4300-03	.3129	544.3	84.30
105	.00000	.15000	10.000	.7553-01	.9166-01	.1026	.4541-02	.3430-03	.2501	541.3	81.25
105	.00000	.17500	11.000	.7618-01	.3243-01	.1035	.4542-02	.3460-03	.2525	542.4	82.37
105	.00000	.20000	12.000	.6806-01	.8254-01	.9237-01	.4540-02	.3090-03	.2260	540.9	80.86
105	.00000	.25000	13.000	.8148-01	.9884-01	.1106	.4541-02	.3700-03	.2703	541.3	81.34
105	.00000	.30000	14.000	.7421-01	.9004-01	.1008	.4541-02	.3370-03	.2460	541.5	81.49
105	.00000	.40000	15.000	.9225-01	.1120	.1253	.4542-02	.4190-03	.3055	542.2	82.23
105	.00000	.50000	16.000	.1089	.1323	.1482	.4545-02	.4950-03	.3596	545.4	85.43
105	.00000	.60000	17.000	.1116	.1355	.1516	.4541-02	.5070-03	.3700	541.4	81.41
105	.00000	.70000	18.000	.1028	.1248	.1397	.4541-02	.4670-03	.3405	542.2	82.16
105	.00000	.80000	19.000	.1039	.1261	.1412	.4541-02	.4720-03	.3441	541.9	81.88
105	.00000	.90000	20.000	.9778-01	.1186	.1328	.4541-02	.4440-03	.3243	541.2	81.20
105	.00000	1.0000	21.000	.4720-08	.5728-08	.6413-08	.1000-06	.4720-03	.3441	541.9	81.88
105	70.000	.35000	23.000	.6896-01	.8362-01	.9357-01	.4539-02	.3130-03	.2290	540.1	80.08
105	70.000	.37500	24.000	.7794-01	.9457-01	.1059	.4542-02	.3540-03	.2583	542.3	82.28
105	70.000	.40000	25.000	.7640-01	.9276-01	.1039	.4542-02	.3470-03	.2524	543.2	83.20
105	70.000	.50000	26.000	.8875-01	.1077	.1206	.4541-02	.4030-03	.2939	541.8	81.78
105	70.000	.60000	27.000	.9271-01	.1125	.1259	.4541-02	.4210-03	.3072	541.6	81.60
105	70.000	.80000	29.000	.1178	.1430	.1600	.4541-02	.5350-03	.3902	541.8	81.82
105	70.000	1.0000	31.000	.8416-01	.1021	.1142	.4539-02	.3820-03	.2795	539.7	79.73

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

PAGE 7

1H18 B10C5D7H87M3F4V5 X26 ORBITER FUSELAGE

(R0MB10)

BOTTOM OF FUSELAGE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 5.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
106	6.120	4.844	.0000	.0000	3055.	1274.	2569.	2.928

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF FT/SEC	H FT/SEC	OOT BTU/ FT/SEC	TAW DEG. R	TCAL DEG. F
106	.00000	.87500-01	7.0000	.1622	.1820	.1938	.4538-02	.7360-03	.8615	552.2	92.15
106	.00000	.10000+00	8.0000	.1328	.1491	.1588	.4542-02	.6030-03	.7032	556.5	96.53
106	.00000	.12500	9.0000	.8447-01	.9475-01	.1009	.4534-02	.3830-03	.4499	548.2	88.24
106	.00000	.15000	10.000	.7830-01	.8783-01	.9353-01	.4534-02	.3550-03	.4167	548.0	88.01
106	.00000	.17500	11.000	.6971-01	.7818-01	.8324-01	.4533-02	.3160-03	.3716	547.4	87.38
106	.00000	.20000	12.000	.6262-01	.7026-01	.7482-01	.4535-02	.2840-03	.3330	549.4	89.36
106	.00000	.25000	13.000	.7920-01	.8883-01	.9459-01	.4533-02	.3330-03	.4217	547.1	87.10
106	.00000	.30000	14.000	.7346-01	.8239-01	.8771-01	.4531-02	.2900-03	.3409	545.6	85.56
106	.00000	.40000	15.000	.6400-01	.7179-01	.7843-01	.4531-02	.3330-03	.3918	547.1	87.10
106	.00000	.50000	16.000	.5120-01	.5742-01	.6113-01	.4527-02	.2320-03	.2731	545.1	85.10
106	.00000	.60000	17.000	.6185-02	.6930-02	.7373-02	.4531-02	.2800-04	.3321-01	541.2	81.19
106	.00000	.70000	18.000	.4767-01	.5345-01	.5690-01	.4531-02	.2160-03	.2547	545.2	85.24
106	.00000	.80000	19.000	.3731-01	.4183-01	.4453-01	.4529-02	.1690-03	.1992	543.6	83.57
106	.00000	.90000	20.000	.3422-01	.3837-01	.4084-01	.4529-02	.1550-03	.1829	543.2	83.15
106	.00000	1.0000	21.000	.1690-08	.1895-08	.2017-08	.1000-06	.1690-03	.1932	543.6	83.57
106	70.000	.35000	23.000	.8120-01	.9105-01	.9593-01	.4532-02	.3680-03	.4334	546.6	86.55
106	70.000	.37500	24.000	.8249-01	.9253-01	.9853-01	.4534-02	.3740-03	.4391	546.5	86.50
106	70.000	.40000	25.000	.9420-01	.1057	.1125	.4533-02	.4120-03	.4842	547.4	87.37
106	70.000	.50000	26.000	.9089-01	.1019	.1085	.4533-02	.3800-03	.4470	546.0	86.05
106	70.000	.60000	27.000	.8385-01	.3404-01	.1001	.4532-02	.2270-03	.2672	544.0	84.04
106	70.000	.80000	29.000	.501-01	.5619-01	.5883-01	.4530-02	.1770-03	.2085	542.4	82.37
106	70.000	1.0000	31.000	.3909-01	.4383-01	.4666-01	.4528-02				

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

IH18 B10C5U7M87M3F4V5 T8 X26 ORBITER FUSELAGE

BOTTOM OF FUSELAGE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
109	6.120	4.728	.0000	.0000	3059.	1277.	2501.	2.897

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
109	.00000	.87500-01	7.0000	.1373	.1539	.1638	.4510-02	.6190-03	.7702	544.7	84.72
109	.00000	.10000+00	8.0000	.1153	.1293	.1377	.4509-02	.5200-03	.6139	543.6	83.64
109	.00000	.12500	9.0000	.8611-01	.9651-01	.1027	.4506-02	.3880-03	.4573	541.4	81.40
109	.00000	.15000	10.000	.6059-01	.6791-01	.7229-01	.4506-02	.2730-03	.3230	541.0	81.01
109	.00000	.17500	11.000	.3862-01	.4327-01	.4605-01	.4506-02	.1740-03	.2063	540.6	80.62
109	.00000	.20000	12.000	.6837-01	.7663-01	.8156-01	.4505-02	.3080-03	.3647	540.2	80.18
109	.00000	.25000	13.000	.1487	.1668	.1776	.4512-02	.6710-03	.7901	546.7	86.75
109	.00000	.30000	14.000	.1527	.1713	.1824	.4511-02	.6890-03	.8122	546.3	86.29
109	.00000	.40000	15.000	.1167	.1308	.1392	.4509-02	.5260-03	.6212	543.9	83.89
109	.00000	.50000	16.000	.1288	.1445	.1538	.4510-02	.5810-03	.6851	545.0	84.96
109	.00000	.60000	17.000	.4661-01	.5225-01	.5562-01	.4505-02	.2100-03	.2484	539.8	79.83
109	.00000	.70000	18.000	.1231	.1380	.1469	.4509-02	.5550-03	.6556	543.6	83.60
109	.00000	.80000	19.000	.1089	.1221	.1299	.4508-02	.4910-03	.5809	539.9	82.95
109	.00000	.90000	20.000	.5861-01	.6567-01	.6988-01	.4504-02	.2640-03	.3136	535.4	79.39
109	.00000	1.0000	21.000	.2466-01	.2764-01	.2941-01	.4502-02	.1110-03	.1314	537.3	77.29
109	.00000	.35000	23.000	.1374	.1541	.1641	.4511-02	.6200-03	.7311	516.2	86.20
109	.00000	.37500	24.000	.1363	.1528	.1627	.4513-02	.6150-03	.7245	516.8	87.76
109	.00000	.40000	25.000	.1477	.1623	.1728	.4512-02	.6530-03	.7699	546.7	86.73
109	.00000	.50000	26.000	.1430	.1604	.1707	.4510-02	.6450-03	.7613	545.5	85.48
109	.00000	.60000	27.000	.1169	.1310	.1395	.4508-02	.5270-03	.6235	542.8	82.85
109	.00000	.70000	29.000	.7786-01	.8727-01	.9289-01	.4508-02	.3510-03	.4155	542.7	82.66
109	.00000	.80000	31.000	.2754-01	.3085-01	.3282-01	.4502-02	.1240-03	.1477	536.7	76.70

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 9

BOTTOM OF FUSELAGE

IH18 B10C507H87M3F4V5 T6 X26 ORBITER FUSELAGE

(ROMB18)

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
117	6.090	4.481	-5.000	.0000	3100.	1298.	2544.	2.852

TEST DATA

RUN NUMBER	Y(BP)	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	IAW DEG. R	ICAL DEG. F
117	.00000	.87500-01	7.0000	.1596	.1789	.1904	.4505-02	.7190-03	.8652	542.8	82.79
117	.00000	.10000+00	8.0000	.1292	.1448	.1541	.4504-02	.5820-03	.7009	542.0	81.98
117	.00000	.12500	9.0000	.9116-01	.1055	.1123	.4503-02	.4240-03	.5115	540.5	80.53
117	.00000	.15000	10.000	.6554-01	.7343-01	.7814-01	.4501-02	.2950-03	.3562	538.2	78.22
117	.00000	.17500	11.000	.4593-01	.5154-01	.5484-01	.4501-02	.2070-03	.2496	538.2	78.24
117	.00000	.20000	12.000	.1263	.1416	.1507	.4505-02	.5690-03	.6850	542.5	82.53
117	.00000	.25000	13.000	.2607	.2924	.3113	.4511-02	.1176-02	1.408	548.8	88.76
117	.00000	.30000	14.000	.2229	.2499	.2661	.4509-02	.1005-02	1.206	546.4	86.37
117	.00000	.40000	15.000	.1438	.1612	.1716	.4506-02	.6480-03	.7737	543.2	83.22
117	.00000	.50000	16.000	.1802	.2020	.2150	.4506-02	.8120-03	.9769	544.0	83.98
117	.00000	.60000	17.000	.2244	.2516	.2677	.4505-02	.1111-02	1.216	542.9	82.91
117	.00000	.70000	18.000	.1576	.1767	.1880	.4505-02	.7100-03	.8546	542.3	82.34
117	.00000	.80000	19.000	.1330	.1491	.1586	.4504-02	.5990-03	.7215	541.9	81.90
117	.00000	.90000	20.000	.7108-01	.7963-01	.8473-01	.4502-02	.3200-03	.3867	539.1	79.14
117	.00000	1.0000	21.000	.1111-01	.1244-01	.1323-01	.4500-02	.5000-03	.6082-01	537.6	77.59
117	.00000	.35000	23.000	.2008	.2251	.2397	.4507-02	.9050-03	1.087	545.0	85.03
117	.00000	.37500	24.000	.1877	.2104	.2240	.4503-02	.8460-03	1.015	546.1	86.04
117	.00000	.40000	25.000	.2030	.2276	.2423	.4507-02	.9150-03	1.100	544.5	84.54
117	.00000	.50000	26.000	.1578	.1769	.1882	.4506-02	.7110-03	.8558	543.2	83.19
117	.00000	.60000	27.000	.1306	.1463	.1557	.4504-02	.5880-03	.7080	541.7	81.73
117	.00000	.80000	29.000	.8418-01	.9434-01	.1004	.4502-02	.3790-03	.4570	539.8	79.05
117	.00000	1.0000	31.000	.1859-01	.2117-01	.2252-01	.4499-02	.8500-04	.1027	536.6	76.62

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 10

(RQMC01)

IH18 B10C507M87M3F4V5 T8 ORBITER CANOPY

FUSELAGE CANOPY

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 5.000 DELTAH = .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
97	5.100	4.778	.0000	.0000	3070.	1290.	2536.	2.960

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
97	.47000-01	1.3340	3.0000	1.653	2.098	2.383	.4640-02	.7856-02	5.249	610.3	150.3
97	.17800	1.3580	6.0000	1.474	1.824	2.070	.4636-02	.6835-02	4.597	605.8	145.8
97	.19600	1.3050	5.0000	1.721	1.625	1.836	.4620-02	.5105-02	4.216	587.7	127.7
97	.21300	1.2510	4.0000	1.165	1.428	1.610	.4611-02	.5371-02	3.759	578.5	118.5

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

PAGE 1:

FUSELAGE CANOPY

1H18 810C5D7W87M3F4V5 T8

ORBITER CANOPY

(RQ1C04)

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
100	6.140	4.923	-5.000	.0000	3040.	1267.	2564.	3.016

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEJ. R	TCAL DEG. F
100	.47000-01	1.3310	3.0000	1.431	1.689	1.810	.4675-02	.6969-02	7.509	638.1	178.1
100	.17800	1.3580	6.0000	1.303	1.475	1.580	.4670-02	.6084-02	6.591	632.2	172.2
100	.19600	1.3050	5.0000	1.183	1.337	1.429	.4652-02	.5504-02	6.073	612.1	152.1
100	.21300	1.2510	4.0000	1.073	1.211	1.294	.4645-02	.4384-02	5.537	604.6	144.6

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 12

IH18 B10C507487M3F4V5 T8 X26 ORBITER CANOPY

(RQMC05)

FUSELAGE CANOPY

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 5.000 DELTAH = .1750
 X-HI = .4700-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
101	6.110	4.700	-5.000	.0000	3080.	1295.	2636.	3.029

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
101	.47000-01	1.3340	3.0000	1.781	2.021	2.168	.4738-02	.8439-02	9.190	654.5	194.5
101	.17900	1.3580	5.0000	1.586	1.798	1.927	.4732-02	.7504-02	8.227	647.2	187.2
101	.19600	1.3050	5.0000	1.442	1.631	1.745	.4712-02	.6796-02	7.615	623.2	163.2
101	.21300	1.2510	4.0000	1.416	1.600	1.711	.4707-02	.6685-02	7.511	616.7	156.7

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

PAGE 13

(RQMC07)

FUSELAGE CANOPY

1H18 B10C507W87M3F4V5

ORBITER CANOPY

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
103	6.200	5.315	.0000	.0000	2570.	1220.	2575.	2.968

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODGT BYU/ FT2SEC	TAW DEG. R	TCAL CSG. F
103	.47000-01	1.3340	3.0000	1.325	1.501	1.608	.4561-02	.6042-02	6.272	630.6	170.6
103	.17800	1.3580	6.0000	1.153	1.313	1.406	.4555-02	.5281-02	5.514	624.5	164.5
103	.19600	1.3050	5.0000	1.042	1.176	1.257	.4532-02	.4721-02	5.040	601.1	141.1
103	.21300	1.2510	4.0000	.9405	1.061	1.133	.4523-02	.4254-02	4.583	591.3	13.3

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 14

(RQMC08)

IH18 B10C5D7H87M3F4V5 ORBITER CANOPY

FUSELAGE CANOPY

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
104	6.120	4.583	-5.000	.0000	3055.	1283.	2550.	2.923

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEG. R	TCL DEG. F
104	.47000-01	1.3340	3.0000	2.829	3.587	4.141	.4645-02	.1314-01	7.985	663.9	203.9
104	.17800	1.3580	6.0000	2.488	3.145	3.624	.4639-02	.1154-01	7.090	657.2	197.2
104	.19600	1.3050	5.0000	2.258	2.822	3.225	.4617-02	.1042-01	6.685	630.1	170.1
104	.21300	1.2510	4.0000	2.092	2.606	2.971	.4603-02	.9642-02	6.273	620.8	160.8

1H18 810C507487M3F4V5 X26 ORBITER CANOPY

FUSELAGE CANOPY

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 ⁵ /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
105	6.120	4.778	-5.000	.0000	3055.	1283.	2536.	2.928

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAN DEG. R	TCAL DEG. F
105	.47000-01	1.3340	3.0000	2.885	3.817	4.554	.4708-02	.1358-01	7.131	746.4	286.4
105	.17800	1.3580	6.0000	3.538	4.531	5.271	.4666-01	.1651-01	9.661	686.2	226.2
105	.19600	1.3050	5.0000	3.055	3.839	4.405	.4632-02	.1415-01	8.893	643.1	183.1
105	.21300	1.2510	4.0000	2.932	3.670	4.198	.4624-02	.1356-01	8.647	633.6	173.6

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

1418 HEATING RATE COLLATION

PAGE 15

(ROMC10)

FUSELAGE CANOPY

1418 B10C507487M3F4V5 X26 ORBITER CANOPY

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
106	6.120	4.844	.0000	.0000	3055.	1274.	2569.	2.928

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	OOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
105	.47000-01	1.3340	3.0000	1.735	1.975	2.122	.4646-02	.8050-02	8.445	675.3	215.3
105	.17800	1.3580	6.0000	1.437	1.634	1.754	.4637-02	.6664-02	7.060	663.5	203.5
106	.19600	1.3050	5.0000	1.233	1.463	1.566	.4608-02	.5957-02	6.520	628.4	168.4
106	.21300	1.2510	4.0000	1.189	1.344	1.438	.4598-02	.5469-02	6.046	617.4	157.4

43

44

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

PAGE 17

1H:3 B10C5074B7M3F4V5 T8 X26 ORBITER CANOPY

FUSELAGE CANOPY

(ROMC11)

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH = .1750
X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
109	6.120	4.728	.0000	.0000	3059.	1277.	2501.	2.897

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF F=0.9	H/HREF R=0.85	HREF BTU/R FT ² SEC	H BTU/R FT ² SEC	QDOT BTU/ FT ² SEC	TAW DEG. R	TCAL DEG. F
109	.47000-01	1.3340	3.0000	1.175	1.329	1.423	.4585-02	.5386-02	5.913	627.1	167.1
109	.17800	1.3580	6.0000	.9854	1.113	1.191	.4574-02	.4507-02	5.007	614.2	154.2
109	.19600	1.3850	5.0000	.8816	.9934	1.061	.4553-02	.4014-02	4.554	590.4	130.4
109	.21300	1.2510	4.0000	.7655	.8613	.9188	.4541-02	.3476-02	3.988	577.8	117.8

IH18 B10C507487M3F4V5 T8 X26 ORBITER CANOPY

(RQMC:18)

FUSELAGE CANOPY

PARAMETER IC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	FO PSI	PT2 PSI
117	6.090	4.481	-5.000	.0000	3100	1298.	2544.	2.852

TEST DATA

RUN NUMBER	Y	X	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	ICAL DEG. F
117	.47000-01	1.3340	3.0000	2.091	2.364	2.529	.4576-02	.9567-02	10.75	622.6	162.6
117	.17800	1.3580	6.0000	1.792	2.025	2.166	.4573-02	.8193-02	9.230	519.8	159.8
117	.19600	1.3052	5.0000	1.545	1.741	1.859	.4551-02	.7032-02	8.107	593.5	133.5
117	.21300	1.2510	4.0000	1.345	1.514	1.615	.4542-02	.5179-02	7.105	583.3	123.3

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

1H18 B10C507-87M3F4V5 T8 ORBITER WING

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0003 MACH = 6.000 DELTAH = .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
97	6.100	4.778	.0000	.0000	3570.	1290.	2535.	2.960

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R F12SEC	H BTU/R F12SEC	OOT BTU/R F12SEC	TAW DEG. R	TCAL DEG. F
97	.40000	.22500	32.000	.2475	.3001	.3358	.4577-02	.1133-02	.8340	542.5	82.63
97	.40000	.25000	33.000	.2571	.3240	.3525	.4579-02	.1223-02	.8340	542.8	82.85
97	.40000	.40000	35.000	.2198	.2565	.2892	.4576-02	.1206-02	.8340	541.5	81.51
97	.40000	.60000	37.000	.1922	.1843	.2250	.4573-02	.0990-03	.8340	537.8	77.84
97	.40000	.80000	39.000	.1604-01	.1182	.1283	.4571-02	.4322-03	.8340	536.0	75.97
97	.60000	.17500	41.000	.3281	.3735	.4180	.4577-02	.1110-02	.8340	542.4	82.43
97	.60000	.20000	42.000	.4097	.4978	.5578	.4574-02	.0988-02	.8340	549.6	89.61
97	.60000	.40000	44.000	.2597	.3272	.3732	.4573-02	.1225-02	.8340	544.3	84.31
97	.60000	.60000	46.000	.1715	.2177	.2432	.4576-02	.0990-03	.8340	541.2	81.20
97	.60000	.80000	48.000	.1222	.1160	.1555	.4573-02	.5990-03	.8340	538.0	76.00
97	.80000	.25000	50.000	.5514	.6108	.7023	.4573-02	.2333-02	.8340	553.6	93.60
97	.80000	.40000	52.000	.4542	.4312	.5514	.4574-02	.1543-02	.8340	549.7	89.67
97	.80000	.60000	54.000	.2821	.3223	.3833	.4580-02	.1202-02	.8340	545.2	85.20
97	.80000	.80000	56.000	.1862	.2257	.2824	.4575-02	.0990-03	.8340	540.5	80.49

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 20

IH18 B10C5D7W87M3F4V5 T8 ORBITER WING

(RQIN -)

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 5.000 DELTAH = .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
100	5.140	4.923	-5.000	.0000	3040.	1267.	2554.	3.016

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
100	.40000	.22500	32.000	.1635	.1834	.1953	.4594-02	.7510-03	.8749	551.1	91.08
100	.40000	.25000	33.000	.1794	.2013	.2143	.4594-02	.8240-03	.9596	551.3	91.29
100	.40000	.40000	35.000	.1533	.1720	.1831	.4592-02	.7040-03	.8213	549.2	89.19
100	.40000	.60000	37.000	.9459-01	.1061	.1129	.4588-02	.4340-03	.5077	545.2	85.24
100	.40000	.80000	39.000	.6498-01	.7286-01	.7756-01	.4586-02	.2980-03	.3492	543.2	83.21
100	.60000	.17500	41.000	.2108	.2365	.2518	.4593-02	.9680-03	1.128	549.9	89.85
100	.60000	.20000	42.000	.2865	.3217	.3428	.4600-02	.1318-02	1.527	557.5	97.58
100	.60000	.40000	44.000	.1828	.2052	.2185	.4594-02	.8400-03	.9774	551.6	91.60
100	.60000	.60000	46.000	.1198	.1344	.1431	.4590-02	.5500-03	.6430	547.5	87.45
100	.60000	.80000	48.000	.7756-01	.8700-01	.9263-01	.4590-02	.3560-03	.4158	547.2	87.25
100	.80000	.25000	50.000	.3744	.4205	.4481	.4602-02	.1723-02	1.991	559.4	99.43
100	.80000	.40000	52.000	.2695	.3025	.3223	.4598-02	.1239-02	1.437	555.1	95.08
100	.80000	.60000	54.000	.1801	.2020	.2151	.4593-02	.8270-03	.9642	550.3	90.34
100	.80000	.80000	56.000	.1092	.1224	.1303	.4589-02	.5010-03	.5864	546.1	86.14

REPRODUCIBILITY OF THIS
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

IM18 HEATING RATE COLLATION

PAGE 21

WING LOWER SURFACE

IM18 BIDC5D7487M3F4V5 T8 X26 ORBITER WING

(RQM405)

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
X-HT = .4700-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
101	6.110	4.700	-5.000	.0000	3080.	1295.	2636.	3.029

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
101	.40000	.22500	32.000	.1656	.1857	.1977	.4644-02	.7690-03	.9139	548.0	87.99
101	.40000	.25000	33.000	.1832	.2055	.2188	.4644-02	.8510-03	1.017	548.1	88.14
101	.40000	.40000	35.000	.1535	.1722	.1833	.4642-02	.7130-03	.6537	545.5	85.51
101	.40000	.60000	37.000	.9401-01	.1054	.1121	.4638-02	.4160-03	.5236	541.3	81.34
101	.40000	.60000	39.000	.6641-01	.7442-01	.7920-01	.4638-02	.3080-03	.3705	542.0	82.02
101	.60000	.17500	41.000	.2132	.2391	.2545	.4643-02	.3322-03	1.185	546.4	86.44
101	.60000	.20000	42.000	.2828	.3174	.3380	.4650-02	.1315-02	1.163	554.6	94.56
101	.60000	.40000	44.000	.1839	.2062	.2155	.4644-02	.6540-03	1.021	548.2	88.16
101	.60000	.80000	46.000	.1215	.1363	.1450	.4640-02	.5540-03	.6765	543.9	83.95
101	.80000	.25000	50.000	.8583-01	.9618-01	.1023	.4637-02	.3960-03	.4792	540.5	80.54
101	.80000	.40000	52.000	.3730	.4125	.4459	.4632-02	.1735-02	2.050	555.1	95.10
101	.80000	.60000	54.000	.2556	.3013	.3209	.4640-02	.1248-02	1.487	551.4	91.44
101	.80000	.60000	54.000	.1738	.2017	.2147	.4643-02	.6350-03	.9933	546.4	86.38
101	.80000	.60000	56.000	.1125	.1251	.1342	.4638-02	.5220-03	.6275	541.6	81.59

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 22

(RQM407)

IH12 B10C5D748743F4V5

ORBITER WING

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
103	6.200	5.315	.0000	.0000	2970.	1220.	2575.	2.968

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
103	.40000	.22500	32.000	.1919	.2151	.2290	.4472-02	.8580-03	.9668	541.8	81.79
103	.40000	.25000	33.000	.2075	.2327	.2477	.4472-02	.9280-03	1.046	541.9	81.86
103	.40000	.40000	35.000	.1714	.1921	.2045	.4470-02	.7660-03	.8640	540.1	80.09
103	.40000	.60000	37.000	.1135	.1272	.1354	.4466-02	.5370-03	.5739	536.5	76.49
103	.40000	.80000	39.000	.8757-01	.3814-01	.1044	.4465-02	.3310-03	.4429	535.2	75.15
103	.60000	.17500	41.000	.2074	.2325	.2475	.4469-02	.9270-03	1.047	539.0	79.02
103	.60000	.20000	42.000	.2828	.3173	.3379	.4476-02	.1266-02	1.421	545.9	85.90
103	.60000	.40000	44.000	.1323	.2152	.2302	.4470-02	.8620-03	.9722	540.6	80.55
103	.60000	.60000	46.000	.1435	.1608	.1712	.4467-02	.6410-03	.7254	537.2	77.17
103	.60000	.80000	48.000	.9543-01	.1069	.1138	.4464-02	.4260-03	.4833	534.5	74.52
103	.80000	.25000	50.000	.3362	.3772	.4016	.4477-02	.1505-02	1.689	546.5	86.50
103	.80000	.40000	52.000	.2558	.2858	.3054	.4473-02	.1144-02	1.288	542.9	82.94
103	.80000	.60000	54.000	.1810	.2029	.2160	.4469-02	.8090-03	.9138	538.9	78.93
103	.80000	.80000	56.000	.1151	.1290	.1373	.4465-02	.5140-03	.5825	535.2	75.22

DATE 20 NOV 75

1H18 HEATING RATE COLLATION
1H18 B10C507487M3F4V5

ORBITER WING
PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000

WING LOWER SURFACE

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
104	6.120	4.583	-5.000	.0000	3055.	1283.	2550.	2.923

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.5	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
104	.40000	.22500	32.000	.1754	.2129	.2384	.4538-02	.7950-03	.5795	543.0	83.02
104	.40000	.25000	33.000	.1858	.2254	.2524	.4538-02	.8430-03	.6147	542.6	82.62
104	.40000	.40000	35.000	.1318	.1599	.1789	.4536-02	.5980-03	.4371	540.7	80.67
104	.40000	.60000	37.000	.7102-01	.8609-01	.9631-01	.4534-02	.3220-03	.2350	538.2	78.23
104	.40000	.80000	39.000	.4523-01	.5483-01	.6134-01	.4532-02	.2050-03	.1503	537.1	77.06
104	.60000	.17500	41.000	.2680	.3253	.3542	.4538-02	.1216-02	.8856	543.1	83.13
104	.60000	.20003	42.000	.3486	.4238	.4750	.4534-02	.1584-02	1.145	548.5	88.47
104	.60000	.40000	44.000	.2421	.2939	.3292	.4539-02	.1093-02	.7997	543.9	83.91
104	.60000	.60000	46.000	.1658	.2011	.2251	.4536-02	.7520-03	.5434	540.9	80.88
104	.80000	.80000	50.000	.1109	.1345	.1525	.4534-02	.5030-03	.3684	533.7	78.69
104	.80000	.25000	52.000	.4530	.5510	.6179	.4545-02	.2059-02	1.485	543.9	89.93
104	.80000	.40000	54.000	.3340	.4058	.4547	.4542-02	.1517-02	1.100	546.7	86.72
104	.80000	.60000	56.000	.2448	.2972	.3328	.4538-02	.1111-02	.8090	543.1	83.07
104	.80000	.80000		.1469	.1781	.1992	.4535-02	.6660-03	.4875	539.9	79.92

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 24

IH18 B10C5D7487M3F4V5 X26 ORBITER WING

(RQM409)

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
105	6.120	4.778	-5.000	.0000	3055.	1283.	2536.	2.928

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QOOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
105	.40000	.22500	32.000	.1944	.2360	.2642	.4543-02	.8830-03	.6427	544.0	84.01
105	.40000	.25000	33.000	.1891	.2295	.2571	.4543-02	.8590-03	.6252	543.5	83.54
105	.40000	.40000	35.000	.1652	.1774	.1986	.4541-02	.6640-03	.4844	541.6	81.57
105	.40000	.60000	37.000	.7601-01	.9213-01	.1031	.4539-02	.3450-03	.2529	539.2	79.17
105	.40000	.80000	39.000	.4715-01	.5720-01	.6402-01	.4539-02	.2140-03	.1563	539.6	79.59
105	.60000	.17500	41.000	.2734	.3319	.3717	.4542-02	.1242-02	.9042	543.2	83.17
105	.60000	.20000	42.000	.3611	.4390	.4920	.4547-02	.1642-02	1.188	548.2	88.16
105	.60000	.40000	44.000	.2536	.3079	.3448	.4543-02	.1152-02	.8377	544.0	84.01
105	.60000	.60000	46.000	.1652	.2004	.2243	.4540-02	.7500-03	.5476	541.0	80.97
105	.60000	.80000	48.000	.1157	.1402	.1569	.4538-02	.5250-03	.3848	539.1	79.12
105	.80000	.25000	50.000	.4746	.5772	.6471	.4549-02	.2159-02	1.559	549.6	89.61
105	.80000	.40000	52.000	.3557	.4322	.4843	.4546-02	.1617-02	1.172	546.8	86.75
105	.80000	.60000	54.000	.2624	.3185	.3587	.4543-02	.1192-02	.8676	543.4	83.35
105	.80000	.80000	56.000	.1590	.1929	.2159	.4540-02	.7220-03	.5278	540.5	80.47

DATE 20 NOV 75

1H18 HEATING RATE COLLATION

1H18 B10C5D7M87M3F4V5 X26 ORBITER WING

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 5.000 X-WT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
106	6.120	4.844	.0000	.0000	3055.	1274.	2569.	2.928

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
106	.40000	.22500	32.000	.2047	.2297	.2447	.4539-02	.9290-03	1.087	553.4	93.44
106	.40000	.25000	33.000	.2181	.2448	.2607	.4539-02	.9900-03	1.158	553.5	93.51
106	.40000	.40000	35.000	.1954	.2080	.2215	.4537-02	.8410-03	.9852	551.5	91.46
106	.40000	.60000	37.000	.1323	.1484	.1591	.4534-02	.6000-03	.7047	547.9	87.86
106	.40000	.80000	39.000	.9620-01	.1079	.1148	.4532-02	.4360-03	.5135	546.4	86.39
106	.60000	.17500	41.000	.2189	.2456	.2615	.4536-02	.9930-03	1.165	549.7	89.70
106	.60000	.20000	42.000	.2994	.3361	.3581	.4543-02	.1360-02	1.585	557.0	97.04
106	.60000	.40000	44.000	.2019	.2265	.2412	.4537-02	.9160-03	1.073	551.6	91.55
106	.60000	.60000	46.000	.1423	.1596	.1699	.4534-02	.6450-03	.7594	548.0	87.98
106	.60000	.80000	48.000	.9733-01	.1091	.1162	.4531-02	.4410-03	.5193	545.2	85.24
106	.80000	.25000	50.000	.3630	.4075	.4342	.4543-02	.1649-02	1.922	557.4	97.44
106	.80000	.40000	52.000	.2771	.3110	.3313	.4540-02	.1258-02	1.470	553.9	93.92
106	.80000	.60000	54.000	.1911	.2144	.2293	.4536-02	.8670-03	1.017	549.9	89.95
106	.80000	.80000	56.000	.1220	.1368	.1457	.4532-02	.5530-03	.6505	546.1	86.13

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 26

IH18 B10C5074B7M3F4V5 T8 X26 ORBITER WING

(RQF4V5(1))

WING LOWER SURFACE

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-MT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
109	5.120	4.728	.0000	.0000	3059.	1277.	2501.	2.897

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C 140	H/HREF R=1.0	H/HREF R=0.3	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
109	.40000	.22500	32.000	.1890	.2120	.2257	.4514-02	.8530-03	1.003	348.9	88.85
109	.40000	.25000	33.000	.1934	.2169	.2310	.4514-02	.8730-03	1.027	549.1	89.11
109	.40000	.40000	35.000	.1660	.1862	.1982	.4512-02	.7490-03	.8823	547.2	87.17
109	.40000	.60000	37.000	.1036	.1162	.1236	.4508-02	.4670-03	.5514	543.5	83.54
109	.40000	.80000	39.000	.7252-01	.8131-01	.8655-01	.4509-02	.3270-03	.3863	544.0	84.00
109	.60000	.17500	41.000	.2152	.2414	.2570	.4512-02	.9710-03	1.143	547.6	87.61
109	.60000	.20000	42.000	.2823	.3169	.3376	.4520-02	.1276-02	1.492	555.5	95.51
109	.60000	.40000	44.000	.1920	.2154	.2294	.4515-02	.8670-03	1.019	550.2	90.19
109	.60000	.60000	46.000	.1317	.1477	.1572	.4511-02	.5940-03	.7002	546.3	86.34
109	.60000	.80000	48.000	.9117-01	.1022	.1088	.4508-02	.4110-03	.4856	543.1	83.07
109	.80000	.25000	50.000	.3892	.4371	.4657	.4525-02	.1761-02	2.051	560.3	100.3
109	.80000	.40000	52.000	.2984	.3350	.3568	.4521-02	.1349-02	1.577	555.0	95.98
109	.80000	.60000	54.000	.2007	.2251	.2297	.4515-02	.9060-03	1.064	550.5	90.47
109	.80000	.80000	56.000	.1268	.1422	.1514	.4510-02	.5720-03	.6750	545.3	85.33

DATE 20 NOV 75

WING LOWER SURFACE

1H18 HEATING RATE COLLATION

1H18 B10C5074B7M3F4V5 T8 X26 ORBITER WING

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
X-HT = .3100-01

PARAMETRIC DATA

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
117	6.090	4.481	-5.000	.0000	3100.	1298.	2544.	2.852

TEST DATA

RUN NUMBER	2Y/B	X/C	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
117	.40000	.22500	32.000	.1711	.1918	.2041	.4507-02	.7710-03	.9265	544.5	84.54
117	.40000	.25000	33.000	.1786	.2003	.2132	.4507-02	.8050-03	.9669	544.6	84.60
117	.40000	.40000	35.000	.1536	.1721	.1872	.4506-02	.6920-03	.8325	543.4	83.35
117	.40000	.60000	37.000	.8927-01	.1001	.1065	.4503-02	.4020-03	.4844	540.6	80.63
117	.40000	.80000	39.000	.6326-01	.7091-01	.7547-01	.4505-02	.2850-03	.3430	542.1	82.12
117	.50000	.17500	41.000	.2015	.2259	.2405	.4505-02	.3050-03	1.032	543.7	83.65
117	.50000	.20000	42.000	.2857	.3204	.3412	.4512-02	.1269-02	1.1542	549.9	89.91
117	.50000	.40000	44.000	.1908	.2139	.2277	.4508-02	.8600-03	1.032	546.1	86.14
117	.50000	.60000	46.000	.1218	.1366	.1453	.4506-02	.5490-03	.6612	543.1	83.14
117	.50000	.80000	48.000	.8100-01	.9081-01	.9655-01	.4506-02	.3650-03	.4388	543.9	83.94
117	.80000	.25000	50.000	.3548	.3980	.4238	.4513-02	.1601-02	1.914	531.0	91.00
117	.80000	.40000	52.000	.2640	.2961	.3152	.4511-02	.1191-02	1.42	548.5	88.51
117	.80000	.60000	54.000	.1791	.2007	.2137	.4507-02	.8070-03	.9595	544.9	84.87
117	.80000	.80000	56.000	.1165	.1306	.1390	.4505-02	.5250-03	.6327	542.4	82.36

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

IH18 810C507H87M3F4V5 T8 EXTERNAL TANK

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAH .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
98	6.100	4.807	.0000	.0000	3070.	1290.	691.4	2.944

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
98	67.500	.60000	66.000	.4278-01	.5179-01	.5788-01	.4558-02	.1950-03	.1447	535.4	76.41
98	90.000	.40000	36.000	.1044	.1264	.1413	.4560-02	.4760-03	.3527	537.8	77.82
98	90.000	.50000	51.000	.6273-01	.7598-01	.8494-01	.4559-02	.2860-03	.2116	537.1	77.12
98	90.000	.60000	65.000	.1293	.1567	.1753	.4564-02	.5900-03	.4348	541.9	61.94
98	90.000	.70000	81.000	.2766	.3356	.3757	.4566-03	.1263-02	.9267	544.7	84.68
98	90.000	.80000	94.000	.2756	.3346	.3748	.4568-02	.1259-02	.9209	546.8	86.79
98	112.50	.40000	35.000	.1085	.1315	.1470	.4561-02	.4950-03	.3660	539.6	79.55
98	112.50	.50000	50.000	.1270	.1538	.1719	.4560-02	.5790-03	.4286	538.4	78.39
98	135.00	.60000	64.000	.2050	.3460	.3875	.4568-02	.1302-02	.9530	546.3	86.28
98	135.00	.40000	34.000	.8183-01	.9906-01	.1107	.4558-02	.3730-03	.2767	536.5	76.45
98	135.00	.45000	43.000	.1662	.2013	.2251	.4561-02	.7580-03	.5603	539.6	79.57
98	135.00	.50000	49.000	.3545	.4302	.4815	.4567-02	.1619-02	1.187	545.0	85.02
98	135.00	.60000	63.000	.2163	.2622	.2933	.4570-02	.1651-02	1.206	547.9	87.91
98	135.00	.70000	79.000	.1718	.2082	.2329	.4563-02	.7840-03	.5783	540.7	80.71
98	135.00	.80000	92.000	.5507	.6702	.7517	.4576-02	.2520-02	1.824	554.7	94.72
98	157.50	.50000	48.000	.3031	.3678	.4117	.4560-02	.1384-02	1.015	544.6	84.62
98	180.00	.00000	62.000	4.498	5.811	6.805	.4703-02	.2116-01	12.08	707.5	247.5
98	180.00	.10000-01	3.0000	3.087	3.898	4.489	.4666-02	.1440-01	8.924	658.8	198.8
98	180.00	.20000-01	4.0000	2.014	2.502	2.847	.4632-02	.9331-02	6.175	616.7	156.7
98	180.00	.60000-01	6.0000	1.406	1.732	1.958	.4611-02	.6484-02	4.450	592.0	132.0
98	180.00	.10000+00	8.0000	.8204	1.003	1.128	.4589-02	.3765-02	2.674	568.2	108.2
98	180.00	.15000	10.000	.4000-01	.4829-01	.5388-01	.4550-02	.1820-03	1.367	528.2	68.16
98	180.00	.20000	12.000	.2016	.2445	.2736	.4564-02	.9200-03	.6766	542.7	82.66
98	180.00	.25000	14.000	.1423	.1724	.1928	.4560-02	.6490-03	.4800	538.4	78.35
98	180.00	.30000	16.000	.1129	.1368	.1529	.4560-02	.5150-03	.3811	537.8	77.80
98	180.00	.35000	25.000	.1164	.1410	.1576	.4560-02	.5310-03	.3933	537.9	77.87

DATE 20 NOV 75

IM18 HEATING RATE COLLATION

PAGE 29

(RQMT02)

RUN NUMBER	PHI	X/L	T/C NO	IM18 B10C507W87M3F4V5 T8				EXTERNAL TANK				TAM DEG. R	TCAL DEG. F
				H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	H/HREF R=0.8	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QOOT BTU/ FT2SEC			
98	180.00	.37500	30.000	.9300-01	.1126	.1258	.1258	.4559-02	.4240-02	.3147		536.9	76.89
98	180.00	.40000	32.000	.3656	.4437	.4968	.4968	.4568-02	.1670-02	1.224		545.8	85.83
98	180.00	.42500	40.000	.9806	.202	1.355	1.355	.4598-02	.4509-02	3.156		578.5	118.5
98	180.00	.45000	41.000	.7967	.9721	1.092	1.092	.4584-02	.3652-02	2.611		563.4	103.4
98	180.00	.47500	46.000	.4973	.6045	.6775	.6775	.4573-02	.2274-02	1.654		551.0	91.00
98	180.00	.50000	47.000	.3368	.4087	.4576	.4576	.4567-02	.1538-02	1.127		545.7	85.69
98	180.00	.52500	54.000	.2624	.3183	.3561	.3561	.4565-02	.1196-02	.8810		542.7	82.73
98	180.00	.55000	55.000	.2244	.2720	.3042	.3042	.4564-02	.1024-02	.7547		541.7	81.74
98	180.00	.60000	61.000	.2976	.3610	.4041	.4041	.4567-02	.1359-02	.9972		544.8	84.81
98	180.00	.65000	70.000	.2922	.3544	.3967	.3967	.4566-02	.1334-02	.9798		543.9	83.92
98	180.00	.70000	77.000	.2584	.3135	.3509	.3509	.4566-02	.1180-02	.8667		543.8	83.82
98	180.00	.80000	90.000	.2570	.3117	.3488	.3488	.4565-02	.1173-02	.8619		543.6	83.57
98	180.00	.90000	103.000	.2154	.2611	.2921	.2921	.4564-02	.9830-03	.7240		542.2	82.18

(RCHT03)

IH1R 810C507487M3F4V5 T8 EXTERNAL TANK

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
99	6.100	4.908	-5.000	.0000	3070.	1286.	2530.	3.016

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
99	67.500	.50000	66.000	.6525-01	.7313-01	.7784-01	.4613-02	.3010-03	.3591	541.9	81.94
99	90.000	.40000	36.000	.8301-01	.9304-01	.9902-01	.4614-02	.3830-03	.4570	542.6	82.62
99	90.000	.50000	51.000	.5075-01	.5687-01	.6052-01	.4611-02	.2340-03	.2794	540.1	80.08
99	90.000	.60000	65.000	.1652	.1853	.1973	.4620-02	.7630-03	.9042	548.5	88.46
99	90.000	.70000	81.000	.1195	.1340	.1427	.4618-02	.5520-03	.6557	546.3	86.28
99	90.000	.80000	94.000	.7477-01	.8382-01	.8921-01	.4614-02	.3450-03	.4112	542.3	82.26
99	112.50	.40000	35.000	.6539-01	.9533-01	.1019	.4614-02	.3940-03	.4693	543.0	83.01
99	112.50	.50000	50.000	.1522	.1707	.1817	.4619-02	.7030-03	.8346	547.5	87.51
99	135.00	.60000	64.000	.2040	.2289	.2437	.4623-02	.9430-03	1.115	551.6	91.58
99	135.00	.70000	79.000	.1716	.1925	.2050	.4621-02	.7930-03	.9398	549.4	89.39
99	135.00	.80000	93.000	.3230	.3629	.3867	.4634-02	.1497-02	1.754	562.8	102.8
99	135.00	.90000	107.000	.1939	.2175	.2316	.4622-02	.8950-03	1.060	551.0	91.01
99	135.00	.10000	1.0000	.1489	.1670	.1779	.4620-02	.6880-03	.8153	548.8	88.78
99	157.50	.50000	48.000	.1262	.1416	.1507	.4619-02	.5830-03	.6918	547.5	87.48
99	157.50	.60000	62.000	.3518	.3953	.4213	.4636-02	.1631-02	1.907	564.9	104.9
99	180.00	.70000	76.000	.2042	.2291	.2440	.4623-02	.9440-03	1.115	552.2	92.20
99	180.00	.80000	90.000	2.230	2.563	2.770	.4781-02	.1056-01	10.55	744.3	284.9
99	180.00	.90000	104.000	1.773	2.026	2.183	.4755-02	.8429-02	8.655	707.6	247.6
99	180.00	.10000	1.0000	1.322	1.501	1.610	.4717-02	.6236-02	6.717	657.2	137.2
99	180.00	.20000	2.0000	1.033	1.169	1.251	.4691-02	.4847-02	5.373	625.9	155.9
99	180.00	.30000	3.0000	.5875	.6618	.7065	.4659-02	.2737-02	3.133	569.5	129.5
99	180.00	.40000	4.0000	.3412-01	.3819-01	.4051-01	.4601-02	.1570-03	1.895	530.1	70.09
99	180.00	.50000	5.0000	.1527	.1714	.1825	.4623-02	.7050-03	.8343	551.9	91.81
99	180.00	.60000	6.0000	.1241	.1392	.1481	.4617-02	.5730-03	.6812	546.2	86.16
99	180.00	.70000	7.0000	.1265	.1418	.1510	.4617-02	.5840-03	.6740	545.6	85.59
99	180.00	.80000	8.0000	.1072	.1202	.1280	.4617-02	.4950-03	.5884	545.5	85.49

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 31
(R0MT03)

RUN NUMBER	PHI	X/L	T/C NO	IH18 B10CSD7487M3F4V5 T8				EXTERNAL TANK				COOT BTU/ FT2SEC	TAM DEG. R	TCAL DEG. F
				H/HREF R=1.0	H/HREF R=C.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	HREF BTU/R FT2SEC					
99	180.00	.37500	30.000	.1068	.1198	.1275	.4616-02	.4930-03	.5850	544.8	84.78			
99	180.00	.40000	32.000	.3779	.4245	.4524	.4634-02	.1751-02	2.050	563.5	103.5			
99	180.00	.42500	40.000	.7174	.8038	.8656	.4675-02	.3354-02	3.779	607.4	147.4			
99	180.00	.45000	41.000	.5543	.6239	.6657	.4651-02	.2578-02	2.972	581.8	121.8			
99	180.00	.47500	46.000	.3349	.3762	.4009	.4634-02	.1552-02	1.818	562.8	102.8			
99	180.00	.50000	47.000	.2339	.2625	.2796	.4626-02	.1082-02	1.277	554.6	94.60			
99	180.00	.52500	54.000	.1761	.1976	.2104	.4622-02	.8140-03	.9643	550.3	90.35			
99	180.00	.55000	55.000	.1634	.1833	.1952	.4620-02	.7550-03	.8953	549.3	89.26			
99	180.00	.60000	61.000	.2214	.2485	.2647	.4626-02	.1024-02	1.207	555.3	95.30			
99	180.00	.65000	70.000	.2085	.2339	.2491	.4624-02	.9640-03	1.140	552.6	92.62			
99	180.00	.70000	77.000	.1763	.1978	.2106	.4623-02	.8150-03	.9642	551.7	91.66			
99	180.00	.80000	90.000	.1796	.2015	.2146	.4622-02	.3300-03	.9818	551.0	90.99			
99	180.00	.90000	103.00	.1474	.1653	.1760	.4620-02	.6810-03	.8077	548.4	88.36			

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

IH18 B10C507467M3F4V5 T8 X26 EXTERNAL TANK

(R0MT06)

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 5.000 DELTAH = .1750
X-HT = .4700-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
102	6.080	4.805	-5.000	.0000	3080.	1298.	2.672	3.031

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	ICAL DEG. F
102	67.500	.60000	66.000	.7974-02	.9560-02	.1090-01	.4640-02	.3700-04	.2753-01	539.2	79.17
102	90.000	.40000	36.000	.6000-02	.8353-02	.9355-02	.4638-02	.3200-04	.2374-01	537.2	77.18
102	90.000	.50000	51.000	.3232-02	.3926-02	.4398-02	.4641-02	.1503-04	.1102-01	540.0	79.98
102	90.000	.60000	65.000	.9483-02	.1147-01	.1381-01	.4640-02	.4400-04	.3297-01	539.0	79.01
102	90.000	.70000	81.000	.4700-09	.5586-09	.6352-09	.1000-05	.4700-04	.3519-01	538.7	78.73
102	90.000	.80000	94.000	.1100-09	.1336-09	.1497-09	.1000-06	.1100-04	.8092-02	538.5	78.51
102	112.50	.40000	35.000	.5171-02	.6259-02	.7011-02	.4641-02	.2400-04	.1781-01	540.0	80.05
102	112.50	.50000	50.000	.4525-02	.5454-02	.6097-02	.4641-02	.2100-04	.1585-01	540.4	80.38
102	112.50	.60000	64.000	.1142-01	.1381-01	.1542-01	.4640-02	.2300-04	.3980-01	538.9	79.92
102	135.00	.40000	34.000	.1573-01	.1907-01	.2133-01	.4641-02	.5300-04	.5412-01	540.2	80.23
102	135.00	.50000	43.000	.2700-09	.3273-09	.3662-09	.1000-06	.2700-04	.2001-01	538.4	78.38
102	135.00	.60000	49.000	.1500-09	.1822-09	.2041-09	.1000-06	.1500-04	.1102-01	540.0	79.98
102	135.00	.70000	63.000	.1034-01	.1253-01	.1401-01	.4640-02	.4800-04	.3573-01	539.0	79.04
102	135.00	.80000	79.000	.1013-01	.1225-01	.1369-01	.4640-02	.4700-04	.3519-01	538.7	78.73
102	157.50	.80000	72.000	.2931-01	.3549-01	.3867-01	.4640-02	.1260-03	.1014	538.8	78.77
102	157.50	.50000	48.000	.2700-09	.3273-09	.3562-09	.1000-06	.2700-04	.2001-01	538.4	78.38
102	157.50	.60000	62.000	.2700-09	.3258-09	.3052-09	.1000-06	.2700-04	.2016-01	539.7	79.73
102	180.00	.00000	1.0000	.6600-09	.7988-09	.8327-09	.1000-06	.6500-04	.4929-01	538.8	78.83
102	180.00	.10000-01	3.0000	.6600-09	.7988-09	.8327-09	.1000-06	.6500-04	.4929-01	538.8	78.83
102	180.00	.20000-01	4.0000	.6600-09	.7988-09	.8327-09	.1000-06	.6500-04	.4929-01	538.8	78.83
102	180.00	.30000-01	6.0000	.6600-09	.7988-09	.8327-09	.1000-06	.6500-04	.4929-01	538.8	78.83
102	180.00	.40000-01	8.0000	.4094-02	.4967-02	.5561-02	.4641-02	.1900-04	.1403-01	539.9	79.83
102	180.00	.15000	10.000	.9050-02	.1096-01	.1225-01	.4641-02	.4200-04	.3132-01	539.9	79.92
102	180.00	.20000	12.000	.8619-02	.1044-01	.1168-01	.4641-02	.4000-04	.2971-01	539.8	79.83
102	180.00	.25000	14.000	.6033-02	.7315-02	.8185-02	.4641-02	.2800-04	.2074-01	539.9	79.90
102	180.00	.30000	18.000	.1401-01	.1694-01	.1892-01	.4641-02	.6500-04	.4872-01	540.1	80.11

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 33

(ROMT06)

IH18 B10C507487H3F4V5 T8 X26 EXTERNAL TANK

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R F12SEC	H BTU/R F12SEC	OOOT BTU/ F12SEC	TAM DEG. R	TCAL DEG. F
102	180.00	.35000	25.000	.1120-01	.1357-01	.1517-01	.4641-02	.5207-04	.3870-01	540.2	80.19
102	180.00	.37500	30.000	.6500-09	.7861-09	.8781-09	.1000+06	.6500-04	.4872-01	540.1	80.11
102	180.00	.40000	32.000	.4740-02	.5765-02	.6463-02	.4641-02	.2200-04	.1607-01	539.9	79.87
102	180.00	.42500	40.000	.3200-09	.3879-09	.4339-09	.1000+05	.3200-04	.2374-01	537.2	77.18
102	180.00	.45000	41.000	.5602-02	.6765-02	.7549-02	.4641-02	.2600-04	.1963-01	539.8	79.84
102	180.00	.47500	46.000	.4956-02	.5984-02	.6677-02	.4641-02	.2300-04	.173-01	539.8	79.76
102	180.00	.50000	47.000	.5820-02	.7056-02	.7894-02	.4639-02	.2700-04	.2001-01	538.4	78.58
102	180.00	.52500	54.000	.5818-02	.7042-02	.7870-02	.4641-02	.2700-04	.2016-01	539.7	79.73
102	180.00	.55000	55.000	.2700-09	.3358-09	.3652-09	.1000+06	.2700-04	.2016-01	539.7	79.73
102	180.00	.6000	61.000	.2700-09	.3268-09	.3652-09	.1000+05	.2700-04	.2016-01	539.7	79.73
102	180.00	.65000	70.000	.5300-09	.6408-09	.7155-09	.1000+06	.5300-04	.3960-01	539.9	78.92
102	180.00	.70000	77.000	.7374-02	.9661-02	.1080-01	.4640-02	.3700-04	.2751-01	539.2	79.20
102	180.00	.80000	90.000	.2371-02	.2680-02	.3226-02	.4639-02	.1100-04	.8322-02	538.5	76.51
102	180.00	.90000	103.00	.5603-02	.6770-02	.7557-02	.4640-02	.2600-04	.1358-01	538.8	78.76

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

IH18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK

(RQHT12)

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 DELTAM = .1750
 X-HI = .3100-01

TEST CONDITIONS

PIN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PI2 PSI
111	6.100	4.543	.0000	.0000	3085.	1294.	2514.	2.955

TEST DATA

PIN NUMBER	PHI	X/L	T/C NO	W/REF R=1.0	W/REF R=0.9	W/REF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QOOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
111	67.500	.50000	68.000	.3561-01	.3993-01	.4243-01	.4575-02	.1510-03	.1950	537.5	77.48
111	90.000	.50000	36.000	.5581-01	.6365-01	.6774-01	.4577-02	.2600-03	.3127	539.6	79.55
111	90.000	.50000	51.000	.3438-01	.3919-01	.4173-01	.4574-02	.1600-03	.1929	536.5	76.48
111	90.000	.50000	65.000	.3075-01	.1080	.1143	.4577-02	.4410-03	.5305	539.6	79.63
111	90.000	.50000	81.000	.1634	.1883	.2011	.4583-02	.7700-03	.9240	545.7	85.68
111	90.000	.50000	94.000	.1433	.1674	.1782	.4581-02	.6940-03	.8134	543.9	83.90
111	112.50	.50000	25.000	.5826-01	.6539-01	.6957-01	.4575-02	.2670-03	.3216	537.7	77.67
111	112.50	.50000	50.000	.1116	.1251	.1332	.4578-02	.5110-03	.6135	541.1	81.07
111	112.50	.50000	64.000	.1544	.1843	.1981	.4580-02	.7530-03	.9043	542.4	82.42
111	135.00	.50000	34.000	.3541-01	.3988-01	.4222-01	.4575-02	.1620-03	.1949	538.0	78.04
111	135.00	.50000	43.000	.1115	.1251	.1331	.4578-02	.5110-03	.6143	541.5	81.53
111	135.00	.50000	49.000	.1962	.2200	.2342	.4582-02	.6990-03	1.076	545.2	85.16
111	135.00	.50000	63.000	.2290	.2538	.2734	.4586-02	.1050-02	1.254	543.9	88.85
111	135.00	.50000	79.000	.1487	.1666	.1774	.4581-02	.6810-03	.8165	543.4	83.42
111	157.50	.50000	32.000	.3541	.3951	.4238	.4580-02	.5520-03	.6819	542.7	82.66
111	157.50	.50000	48.000	.3541	.3974	.4235	.4582-02	.1050-02	1.254	555.7	95.74
111	157.50	.50000	62.000	.1990	.2231	.2375	.4582-02	.1050-02	1.254	546.3	86.31
111	180.00	.50000	1.0000-01	2.539	3.011	3.240	.4578-02	.1050-02	1.254	596.1	236.1
111	180.00	.50000	3.0000	1.820	2.054	2.212	.4572-02	.8500-02	9.318	646.8	186.8
111	180.00	.50000	4.0000	1.151	1.310	1.400	.4578-02	.5366-02	6.123	605.8	145.8
111	180.00	.50000	6.0000	.8298	.9442	.9969	.4578-02	.3833-02	4.441	584.1	124.1
111	180.00	.50000	10000-00	.4501	.5167	.5505	.4597-02	.2115-02	2.500	560.9	100.9
111	180.00	.50000	10.000	.4768-01	.5340-01	.5681-01	.4572-02	.2180-03	.2537	534.7	74.68
111	180.00	.50000	12.000	.1674	.1877	.1999	.4582-02	.7670-03	.9188	544.9	84.93
111	180.00	.50000	14.000	.9176-01	.1028	.1094	.4577-02	.4200-03	.5046	539.9	79.88
111	180.00	.50000	18.000	.7560-01	.8471-01	.9014-01	.4577-02	.3460-03	.4163	539.7	79.68

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 35

(RDMT12)

IH18 B10C507487H3F4V5 T8 X26 EXTERNAL TANK

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QOBT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
111	180.00	.35000	25.000	.6555-01	.7345-01	.7816-01	.4577-02	.3000-03	.3607	539.4	79.43
111	180.00	.37500	30.000	.7165-01	.8030-01	.8547-01	.4578-02	.3280-03	.3938	540.4	80.38
111	180.00	.40000	32.000	.2585	.2900	.3088	.4588-02	.1186-02	1.414	550.9	90.92
111	180.00	.42500	40.000	.5741	.6457	.6886	.4511-02	.2647-02	3.090	575.4	115.4
111	180.00	.45000	41.000	.4734	.5317	.5666	.4589-02	.2177-02	2.568	563.0	103.0
111	180.00	.47500	46.000	.2972	.3335	.3551	.4589-02	.1364-02	1.624	552.1	92.06
111	180.00	.50000	47.000	.2218	.2488	.2649	.4585-02	.1017-02	1.215	548.4	88.42
111	180.00	.52500	54.000	.1946	.2182	.2323	.4584-02	.6320-03	1.066	546.7	86.72
111	180.00	.55000	55.000	.1513	.1696	.1805	.4581-02	.6330-03	.8308	544.3	84.32
111	180.00	.60000	61.000	.1715	.1923	.2047	.4583-02	.7860-03	.9405	545.9	85.86
111	180.00	.65000	70.000	.1754	.1957	.2034	.4583-02	.8040-03	.9620	545.6	85.61
111	180.00	.70000	77.000	.1537	.1731	.1907	.4583-02	.7320-03	.8758	546.0	86.02
111	180.00	.80000	90.000	.1562	.1752	.1865	.4583-02	.7160-03	.8569	545.7	85.71
111	180.00	.90000	103.00	.1366	.1532	.1631	.4582-02	.6260-03	.7495	544.5	84.48

EXTERNAL TANK

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	PN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	P12 PSI
112	6.140	4.817	.0000	.0000	3030.	1250.	2455.	2.843

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
112	67.500	.60000	65.000	.5071-01	.5581-01	.6045-01	.4417-02	.2240-03	.2608	535.6	75.60
112	90.000	.40000	36.000	.5430-01	.7204-01	.7660-01	.4417-02	.2840-03	.3302	535.4	75.43
112	90.000	.50000	51.000	.5139-01	.5758-01	.6127-01	.4417-02	.2270-03	.2640	535.0	74.97
112	90.000	.60000	65.000	.4325-01	.4646-01	.5157-01	.4416-02	.1910-03	.2821	534.6	74.61
112	90.000	.70000	81.000	.3824-01	.4285-01	.4562-01	.4419-02	.1690-03	.1900	536.9	76.87
112	90.000	.80000	94.000	.4413-01	.4946-01	.5265-01	.4419-02	.1950-03	.2260	537.2	77.18
112	112.50	.40000	75.000	.8101-01	.9279-01	.9663-01	.4419-02	.3500-03	.4155	537.3	77.26
112	112.50	.50000	50.000	.6463-01	.7493-01	.8109	.4419-02	.3740-03	.4348	537.3	77.33
112	112.50	.60000	64.000	.7241-01	.8115-01	.8635-01	.4419-02	.3200-03	.3718	536.7	76.69
112	135.00	.40000	34.000	.6554-01	.7355-01	.7827-01	.4418-02	.2900-03	.3371	535.0	75.37
112	135.00	.50000	43.000	.6179-01	.6924-01	.7367-01	.4418-02	.2730-03	.3174	535.9	75.91
112	135.00	.60000	49.000	.6338-01	.7102-01	.7552-01	.4418-02	.2800-03	.3251	535.7	75.65
112	135.00	.70000	63.000	.5501-01	.6163-01	.6557-01	.4417-02	.2430-03	.2830	535.1	75.12
112	135.00	.80000	79.000	.6291-01	.7049-01	.7500-01	.4419-02	.2780-03	.3233	537.4	77.39
112	135.00	.90000	92.000	.5269-01	.5905-01	.6284-01	.4422-02	.2320-03	.2706	539.8	79.83
112	157.50	.50000	48.000	.5139-01	.5758-01	.6127-01	.4418-02	.2270-03	.2637	535.9	75.88
112	157.50	.60000	62.000	.4506-01	.5048-01	.5370-01	.4416-02	.1990-03	.2320	534.4	74.36
112	180.00	.00000	1.0000	2.517	2.872	3.090	.4554-02	.1146-01	11.59	687.5	227.5
112	180.00	.10000-01	3.0000	1.770	2.007	2.152	.4518-02	.7395-02	8.446	642.6	182.6
112	180.00	.20000-01	4.0000	1.159	1.308	1.399	.4484-02	.5197-02	5.688	604.4	144.4
112	180.00	.30000-01	5.0000	.8300	.9348	.9978	.4465-02	.3706-02	4.132	583.8	123.8
112	180.00	.40000-00	8.0000	.4392	.4934	.5258	.4442-02	.1951-02	2.222	560.4	100.4
112	180.00	.50000	10.000	.4032-01	.4516-01	.4805-01	.4415-02	.1780-03	2.074	533.4	73.43
112	180.00	.60000	12.000	.1595	.1789	.1904	.4426-02	.7060-03	.8155	543.7	83.69
112	180.00	.70000	14.000	.8735-01	.9789-01	1.042	.4419-02	.3460-03	.4480	537.4	77.41
112	180.00	.80000	18.000	.7174-01	.8039-01	.8553-01	.4419-02	.3170-03	.3685	536.7	76.67
112	180.00	.90000	25.000	.6110-01	.6847-01	.7286-01	.4419-02	.2700-03	.3136	536.6	76.63

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 37

(RQHT13)

RUN NUMBER	PHI	X/L	T/C NO	IH18 T8 X26		EXTERNAL TANK					QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
				H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC					
112	180.00	.37500	30.000	.6632-01	.7431-01	.7907-01	.4413-02	.2930-03	.3407	536.0	75.95		
112	180.00	.40000	32.000	.5387-01	.6036-01	.6424-01	.4418-02	.2380-03	.2766	535.8	75.76		
112	180.00	.42500	40.000	.5205-01	.5833-01	.6207-01	.4419-02	.2300-03	.2670	537.3	77.28		
112	180.00	.45000	41.000	.5366-01	.6011-01	.6396-01	.4417-02	.2370-03	.2759	535.3	75.34		
112	180.00	.47500	46.000	.5498-01	.6160-01	.6554-01	.4420-02	.2430-03	.2827	537.8	77.76		
112	180.00	.50000	47.000	.5704-01	.6390-01	.6800-01	.4418-02	.2520-03	.2933	535.9	75.92		
112	180.00	.52500	54.000	.5003-01	.5605-01	.5964-01	.4417-02	.2210-03	.2574	535.0	75.01		
112	180.00	.55000	55.000	.5027-01	.5633-01	.5994-01	.4416-02	.2220-03	.2581	534.6	74.59		
112	180.00	.60000	61.000	.5637-01	.6315-01	.6719-01	.4417-02	.2490-03	.2899	534.7	74.67		
112	180.00	.65000	70.000	.5299-01	.5937-01	.6318-01	.4416-02	.2340-03	.2721	534.4	74.45		
112	180.00	.70000	77.000	.5360-01	.6009-01	.6396-01	.4422-02	.2370-03	.2742	539.7	79.71		
112	180.00	.80000	90.000	.5610-01	.6288-01	.6693-01	.4421-02	.2480-03	.2874	539.4	79.42		
112	180.00	.90000	103.00	.5564-01	.6237-01	.6639-01	.4421-02	.2460-03	.2850	539.4	79.37		

DATE 20 NOV 75
I118 HEATING RATE COLLATION
I118 18 X26

EXTERNAL TANK

X-HT = .3100-01

EXTERNAL TANK
PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000
PT2 PSI
2.866
TO DEG.R
1267. 2538.
V FT/SEC
3055.
H BTU/R
1267. 2538.

TEST CONDITIONS

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/R FT2SEC	TAW DEG. R	TOTAL DEG. F
113	67.500	.60000	66.000	.6298-01	.7053-01	.7505-01	.4463-02	.2810-03	.3316	537.0	76.97
113	90.000	.40000	36.000	.8645-01	.9689-01	.1031	.4465-02	.3860-03	.4537	538.7	78.70
113	90.000	.50000	51.000	.7527-01	.8435-01	.8977-01	.4464-02	.3360-03	.3953	537.8	77.83
113	90.000	.60000	65.000	.5625-01	.6303-01	.6708-01	.4462-02	.2510-03	.2955	536.4	76.36
113	90.000	.70000	81.000	.6093-01	.6829-01	.7267-01	.4464-02	.2720-03	.3199	538.6	78.62
113	90.000	.80000	94.000	.7189-01	.8058-01	.8575-01	.4465-02	.3210-03	.3773	539.2	79.16
113	112.50	.40000	35.000	.8333-01	.9338-01	.9935-01	.4464-02	.3720-03	.4381	538.1	78.09
113	112.50	.50000	50.000	.7348-01	.8232-01	.8759-01	.4464-02	.3280-03	.3867	537.9	77.87
113	112.50	.60000	64.000	.8022-01	.8989-01	.9566-01	.4464-02	.3580-03	.4214	537.1	77.06
113	135.00	.40000	43.000	.8557-01	.9590-01	.1021	.4465-02	.3950-03	.4646	538.6	78.58
113	135.00	.50000	59.000	.8847-01	.9914-01	.1055	.4465-02	.3820-03	.4493	538.9	78.88
113	135.00	.60000	79.000	.9250-01	.1037	.1103	.4465-02	.4130-03	.4862	538.8	78.83
113	135.00	.70000	92.000	.1050	.1177	.1252	.4467-02	.4580-03	.523	540.7	80.70
113	135.00	.80000	98.000	.1032	.1157	.1232	.4467-02	.4610-03	.5408	541.1	81.09
113	157.50	.50000	48.000	.1193	.1337	.1424	.4466-02	.5330-03	.6260	541.4	81.41
113	157.50	.60000	62.000	.1211	.1358	.1445	.4466-02	.5410-03	.6355	539.8	79.81
113	180.00	.00000	1.0000	2.737	3.114	3.345	.4581-02	.1254-01	13.12	668.9	208.9
113	180.00	.10000-01	3.0000	2.000	2.266	2.427	.4582-02	.9155-02	9.845	634.1	174.1
113	180.00	.20000-01	4.0000	1.317	1.486	1.588	.4582-02	.5957-02	6.647	599.7	139.7
113	180.00	.30000-01	6.0000	.9758	1.099	1.172	.4506-02	.4397-02	4.982	582.3	122.3
113	180.00	.40000-01	8.0000	.5578	.6266	.6678	.4487-02	.2503-02	2.886	561.5	101.5
113	180.00	.50000	10.000	.6549-01	.7335-01	.7804-01	.4459-02	.2920-03	.3448	533.6	73.61
113	180.00	.60000	12.000	.2515	.2821	.3004	.4474-02	.1125-02	1.313	548.3	88.28
113	180.00	.70000	14.000	.1312	.1470	.1565	.4467-02	.5860-03	.6884	541.5	81.47
113	180.00	.80000	18.000	.1176	.1318	.1402	.4466-02	.5250-03	.6171	540.5	80.51
113	180.00	.90000	25.000	.1072	.1202	.1280	.4467-02	.4790-03	.5620	541.0	81.02
113	180.00	.35000	25.000	.1072	.1202	.1280	.4467-02	.4790-03	.5620	541.0	81.02

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 39

(RQMT14)

RUN NUMBER	PH1	X/L	T/C NO	IH18 TB X26		EXTERNAL TANK		QDOT BTU/ FT2SEC	TAM DEG. R	TCAL DEG. F
				H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	H BTU/R FT2SEC			
113	180.00	.37500	30.000	.1117	.1252	.1332	.4467-02	.5866	540.7	80.73
113	180.00	.40000	32.000	.1105	.1240	.1320	.4467-02	.5797	540.8	80.80
113	180.00	.42500	40.000	.1043	.1170	.1245	.4466-02	.5475	540.6	80.64
113	180.00	.45000	41.000	.1063	.1192	.1269	.4467-02	.5576	540.8	80.83
113	180.00	.47500	46.000	.1148	.1287	.1370	.4467-02	.6023	541.2	81.16
113	180.00	.50000	47.000	.1186	.1330	.1416	.4467-02	.6223	541.4	81.43
113	180.00	.52500	54.000	.1115	.1250	.1330	.4467-02	.5849	540.7	80.74
113	180.00	.55000	55.000	.1124	.1260	.1341	.4466-02	.5902	540.2	80.20
113	180.00	.60000	61.000	.1207	.1353	.1440	.4466-02	.6328	540.6	80.57
113	180.00	.65000	70.000	.1229	.1378	.1467	.4466-02	.6449	540.3	80.29
113	180.00	.70000	77.000	.1193	.1337	.1423	.4469-02	.6246	543.4	83.42
113	180.00	.80000	90.000	.1280	.1435	.1527	.4469-02	.6711	543.2	83.16
113	180.00	.90000	103.00	.1249	.1400	.1490	.4469-02	.6538	543.1	83.07

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 40

(RQ4T15)

EXTERNAL TANK

IH18 TB

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
114	6.120	4.580	-5.000	.0000	3070.	1285.	2532.	2.852

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/H R=1.1	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QDOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
114	67.500	.60000	66.000	.6222-01	.6975-01	.7425-01	.4484-02	.2790-03	.3319	541.3	81.35
114	90.000	.40000	36.000	.7402-01	.8298-01	.8833-01	.4485-02	.3320-03	.3951	542.9	82.89
114	90.000	.50000	51.000	.7179-01	.8048-01	.8566-01	.4485-02	.3220-03	.3834	542.5	82.49
114	90.000	.60000	65.000	.7070-01	.7925-01	.8436-01	.4484-02	.3170-03	.3771	541.7	81.70
114	90.000	.70000	81.000	.6175-01	.6523-01	.7369-01	.4486-02	.2770-03	.3294	543.7	83.66
114	90.000	.80000	94.000	.7065-01	.7923-01	.8435-01	.4486-02	.3170-03	.3766	543.8	83.82
114	112.50	.40000	35.000	.8783-01	.9845-01	.1048	.4486-02	.3940-03	.4693	543.5	83.47
114	112.50	.50000	50.000	.8359-01	.9472-01	.9977-01	.4486-02	.3750-03	.4457	543.4	83.39
114	112.50	.60000	64.000	.8941-01	.1002	.1067	.4485-02	.4010-03	.4774	542.1	82.09
114	135.00	.40000	34.000	.9650-01	.1082	.1152	.4487-02	.4330-03	.5151	544.1	84.13
114	135.00	.50000	43.000	.9325-01	.1052	.1120	.4486-02	.4210-03	.5012	543.9	83.93
114	135.00	.60000	49.000	.9809-01	.1039	.1170	.4486-02	.4400-03	.5238	543.6	83.64
114	135.00	.70000	63.000	.9741-01	.1092	.1162	.4486-02	.4370-03	.5202	543.0	83.00
114	135.00	.80000	79.000	.9682-01	.1114	.1191	.4488-02	.4480-03	.5325	545.1	85.10
114	157.50	.50000	92.000	.9050-01	.1117	.1189	.4487-02	.4750-03	.5311	545.5	85.55
114	157.50	.60000	48.000	.1059	.1187	.1263	.4487-02	.4750-03	.5650	545.0	85.00
114	180.00	.60000	62.000	.1068	.1197	.1274	.4486-02	.4730-03	.5695	543.7	83.70
114	180.00	.10000-01	1.0000	2.194	2.958	3.182	.4611-02	.1196-01	12.46	691.5	231.5
114	180.00	.30000-01	3.0000	1.960	2.225	2.387	.4585-02	.8926-02	9.675	656.5	196.5
114	180.00	.50000-01	5.0000	1.372	1.551	1.659	.4554-02	.6247-02	6.961	618.9	158.9
114	180.00	.70000-01	7.0000	.9899	1.116	1.192	.4514-02	.4489-02	5.102	596.4	136.4
114	180.00	.90000-01	9.0000	.5911	.6647	.7089	.4514-02	.2668-02	3.093	573.8	113.8
114	180.00	.15000	10.000	.3330-01	.3730-01	.3966-01	.4474-02	.1490-03	.1787	530.7	70.67
114	180.00	.20000	12.000	.1637	.1830	.1943	.4492-02	.7330-03	.8680	549.4	89.43
114	180.00	.25000	14.000	.1192	.1337	.1423	.4488-02	.5350-03	.6354	545.3	85.30
114	180.00	.30000	16.000	.1058	.1232	.1311	.4488-02	.4930-03	.5857	545.1	85.11
114	180.00	.35000	25.000	.1003	.1124	.1197	.4480-02	.4500-03	.5342	545.4	85.42

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 41

(RQMT15)

RUN NUMBER	PHI	X/L	T/C NO	IH18		H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	EXTERNAL TANK			QDOT BTU/ FT2SEC	TAN DEG. R	TCAL DEG. F
				T8	T8				HREF BTU/R FT2SEC	H BTU/R FT2SEC	H			
114	180.00	.37500	30.000	.1079	.1210	.1288	.1288	.1288	.4487-02	.4840-03	.5747	544.8	84.77	
114	180.00	.40000	32.000	.1045	.1172	.1248	.1248	.1248	.4487-02	.4690-03	.5570	544.8	84.84	
114	180.00	.42500	40.000	.1025	.1149	.1224	.1224	.1224	.4487-02	.4600-03	.5468	544.7	84.67	
114	180.00	.45000	41.000	.1012	.1134	.1207	.1207	.1207	.4487-02	.4540-03	.5399	544.7	84.66	
114	180.00	.47500	46.000	.1001	.1122	.1195	.1195	.1195	.4487-02	.4490-03	.5331	544.8	84.80	
114	180.00	.50000	47.000	.1047	.1174	.1250	.1250	.1250	.4487-02	.4700-03	.5591	544.7	84.66	
114	180.00	.52500	54.000	.1061	.1189	.1266	.1266	.1266	.4487-02	.4760-03	.5657	544.3	84.33	
114	180.00	.55000	55.000	.9920-01	.1112	.1183	.1183	.1183	.4486-02	.4450-03	.5300	543.2	83.24	
114	180.00	.60000	61.000	.9942-01	.1115	.1186	.1186	.1186	.4486-02	.4460-03	.5305	543.8	83.75	
114	180.00	.65000	70.000	.1128	.1264	.1346	.1346	.1346	.4486-02	.5060-03	.6026	543.3	83.26	
114	180.00	.70000	77.000	.1107	.1242	.1322	.1322	.1322	.4489-02	.4970-03	.5897	545.4	86.41	
114	180.00	.80000	90.000	.1148	.1287	.1370	.1370	.1370	.4488-02	.5150-03	.6119	546.1	86.08	
114	180.00	.90000	103.00	.1147	.1286	.1369	.1369	.1369	.4489-02	.5150-03	.6117	546.4	86.40	

EXTERNAL TANK

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = .0000 BETA = .0000 MACH = 6.000

TEST CONDITIONS

RUN NUMBER	MACH	PN/L X10 ⁵ /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
115	6.100	4.569	.0000	.0000	3090.	1297.	2508.	2.849

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT ² SEC	H BTU/R FT ² SEC	QDOT BTU/ FT ² SEC	TAW DEG. R	TCAL DEG. F
115	67.500	.60000	66.000	.5291-01	.5929-01	.6308-01	.4438-02	.2380-03	.2873	539.4	79.42
115	90.000	.40000	36.000	.6935-01	.7772-01	.8271-01	.4499-02	.3120-03	.3759	540.0	80.00
115	90.000	.50000	51.000	.6316-01	.7100-01	.7556-01	.4498-02	.2850-03	.3436	539.6	79.63
115	90.000	.60000	65.000	.5826-01	.6526-01	.6944-01	.4497-02	.2620-03	.3168	539.7	78.71
115	90.000	.70000	81.000	.4957-01	.5555-01	.5912-01	.4499-02	.2230-03	.2684	540.9	80.93
115	90.000	.80000	94.000	.5400-01	.6052-01	.6440-01	.4500-02	.2430-03	.2927	541.3	81.28
115	112.50	.40000	35.000	.6892-01	.7722-01	.8218-01	.4498-02	.3100-03	.3739	539.8	79.79
115	112.50	.50000	50.000	.6263-01	.7026-01	.7477-01	.4498-02	.2820-03	.3395	539.9	79.85
115	112.50	.60000	64.000	.5515-01	.6180-01	.6577-01	.4497-02	.2480-03	.2988	538.7	78.72
115	135.00	.40000	34.000	.6735-01	.7548-01	.8033-01	.4499-02	.3030-03	.3648	540.1	80.09
115	135.00	.50000	43.000	.5736-01	.6429-01	.6822-01	.4498-02	.2580-03	.3105	539.9	79.91
115	135.00	.60000	53.000	.6032-01	.6826-01	.7254-01	.4498-02	.2740-03	.3304	539.5	79.52
115	135.00	.70000	63.000	.5469-01	.6127-01	.6519-01	.4498-02	.2460-03	.2973	538.9	78.93
115	135.00	.80000	79.000	.5046-01	.5654-01	.6017-01	.4492-02	.2270-03	.2736	540.9	80.91
115	157.50	.60000	92.000	.5533-01	.6200-01	.6598-01	.4500-02	.2490-03	.3002	541.5	81.49
115	157.50	.50000	49.000	.6757-01	.7572-01	.8058-01	.4499-02	.3040-03	.3663	540.6	80.63
115	180.00	.00000	62.000	.6059-01	.6831-01	.7238-01	.4498-02	.2730-03	.3291	539.2	79.20
115	180.00	.10000	1.0000	2.642	3.013	3.240	.4625-02	.1222-01	12.87	692.0	232.0
115	180.00	.30000	3.0000	1.840	2.085	2.235	.4589-02	.8443-02	9.298	644.2	184.2
115	180.00	.50000	4.0000	1.216	1.372	1.467	.4558-02	.5543-02	6.314	606.4	146.4
115	180.00	.60000	6.0000	.8537	.9612	1.020	.4540-02	.3876-02	4.497	585.0	125.0
115	180.00	.80000	8.0000	.4893	.5496	.5857	.4521-02	.2212-02	2.614	563.9	103.9
115	180.00	.15000	10.000	.1605-01	.1795-01	.1908-01	.4487-02	.7200-04	.8806-01	527.7	67.70
115	180.00	.20000	12.000	.1219	.1367	.1455	.4502-02	.5490-03	.6603	543.5	83.50
115	180.00	.25000	14.000	.7602-01	.8519-01	.9066-01	.4499-02	.3420-03	.4119	540.8	80.78
115	180.00	.30000	18.000	.7913-01	.8869-01	.9440-01	.4499-02	.3560-03	.4283	540.8	80.78
115	180.00	.35000	25.000	.7067-01	.7919-01	.8427-01	.4500-02	.3180-03	.3834	541.2	81.24

DATE 20 NOV 75

IH18 HEATING RATE COLLATION

PAGE 43

(RQMT16)

RUN NUMBER	PHI	X/L	T/C NO	IH18 T8		EXTERNAL TANK				TAW DEG. R	TCAL DEG. F
				H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R F12SEC	H BTU/R F12SEC	QOOT BTU/ F12SEC		
115	180.00	.37500	30.000	.6890-01	.7721-01	.8216-01	.4499-02	.3100-03	.3740	540.6	80.65
115	180.00	.40000	32.000	.6001-01	.6727-01	.7159-01	.4499-02	.2700-03	.3248	540.6	80.63
115	180.00	.42500	40.000	.6513-01	.7299-01	.7768-01	.4499-02	.2930-03	.3528	540.3	80.26
115	180.00	.45000	41.000	.6157-01	.6900-01	.7343-01	.4499-02	.2770-03	.3338	540.4	80.43
115	180.00	.47500	46.000	.5935-01	.6650-01	.7076-01	.4499-02	.2670-03	.3220	540.6	80.62
115	180.00	.50000	47.000	.6157-01	.6900-01	.7342-01	.4499-02	.2770-03	.3338	540.6	80.56
115	180.00	.52500	54.000	.5691-01	.6378-01	.6787-01	.4498-02	.2560-03	.3086	539.9	79.95
115	180.00	.55000	55.000	.4958-01	.5555-01	.5911-01	.4498-02	.2230-03	.2690	539.7	79.69
115	180.00	.60000	61.000	.5247-01	.5879-01	.6256-01	.4498-02	.2360-03	.2846	539.5	79.46
115	180.00	.65000	70.000	.5380-01	.6029-01	.6416-01	.4498-02	.2420-03	.2916	539.0	79.01
115	180.00	.70000	77.000	.5843-01	.6551-01	.6973-01	.4501-02	.2630-03	.3159	542.2	82.20
115	180.00	.90000	90.000	.4400-01	.4931-01	.5247-01	.4500-02	.1980-03	.2387	541.7	81.66
115	180.00	.90000	103.00	.4798-01	.5379-01	.5726-01	.4502-02	.2160-03	.2594	543.6	83.60

IH18 B10C5D7H87M3F4V5 T8 X26 EXTERNAL TANK

EXTERNAL TANK

PARAMETRIC DATA

ALPHA = -5.000 BETA = .0000 MACH = 6.000 DELTAH = .1750
 X-HT = .3100-01

TEST CONDITIONS

RUN NUMBER	MACH	RN/L X10 5 /FT	ALPHA DEG.	BETA DEG.	V FT/SEC	TO DEG.R	PO PSI	PT2 PSI
118	6.100	4.424	-5.000	.0000	3100.	1303.	2474.	2.841

TEST DATA

RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF P=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	ODOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
118	67.500	.60000	66.000	.8145-01	.9131-01	.9720-01	.4506-02	.3670-03	.4426	545.4	85.45
118	90.000	.40000	36.000	.9363-01	.1050	.1118	.4507-02	.4220-03	.5083	546.5	85.54
118	90.000	.50000	51.000	.7010-01	.7860-01	.8267-01	.4506-02	.3160-03	.3808	547.4	87.40
118	90.000	.60000	65.000	.1030	.1154	.1229	.4506-02	.4640-03	.5600	545.1	85.13
118	90.000	.70000	81.000	.1327	.1468	.1584	.4508-02	.5480-03	.7199	547.7	87.71
118	90.000	.80000	94.000	.9632-01	.1080	.1150	.4506-02	.4340-03	.5232	545.5	85.53
118	112.50	.40000	35.000	.6569-01	.7356-01	.7841-01	.4506-02	.2960-03	.3565	545.1	85.12
118	112.50	.50000	50.000	.1342	.1483	.1579	.4507-02	.5800-03	.7177	546.7	86.74
118	112.50	.60000	64.000	.2071	.2323	.2473	.4510-02	.9340-03	1.122	549.9	89.94
118	135.00	.40000	34.000	.5816-01	.6520-01	.6940-01	.4505-02	.2620-03	.3161	544.5	84.54
118	135.00	.45000	43.000	.1714	.1923	.2047	.4503-02	.7730-03	.9298	548.2	88.24
118	135.00	.50000	49.000	.3430	.3850	.4101	.4516-02	.1519-02	1.851	556.1	96.11
118	135.00	.60000	63.000	.2042	.2290	.2439	.4510-02	.9210-03	1.107	549.3	89.31
118	135.00	.70000	79.000	.1606	.1801	.1917	.4509-02	.7240-03	.8704	548.6	88.63
118	135.00	.80000	92.000	.4431	.1505	.1708	.4508-02	.6450-03	.7760	547.9	87.86
118	157.50	.50000	48.000	.3417	.3445	.4065	.4516-02	.1543-02	1.844	549.8	90.18
118	157.50	.60000	62.000	.2215	.2465	.2645	.4510-02	.5470-03	1.230	549.8	89.84
118	180.00	.00000	1.0000	2.739	3.120	3.353	.4619-02	.1255-01	13.51	683.3	223.5
118	180.00	.10000-01	3.0000	2.018	2.268	2.452	.4513-02	.9270-02	10.24	647.3	107.0
118	180.00	.20000-01	4.0000	1.355	1.523	1.634	.4512-02	.6180-02	7.063	603.9	148.9
118	180.00	.30000-01	5.0000	1.033	1.164	1.243	.4518-02	.4823-02	5.448	591.6	131.8
118	180.00	.40000-01	6.0000	.5754	.6468	.6896	.4529-02	.2608-02	3.076	570.7	110.7
118	180.00	.50000-01	8.0000	.8782-01	.9836-01	.1016	.4498-02	.3950-03	.4803	536.8	76.82
118	180.00	.60000	10.000	.2767	.3105	.3309	.4517-02	.1250-02	1.492	557.2	97.16
118	180.00	.70000	12.000	.1544	.1731	.1843	.4509-02	.6960-03	.8363	548.9	88.94
118	180.00	.80000	14.000	.1366	.1532	.1631	.4509-02	.6160-03	.7411	548.2	88.16

IH18 HEATING RATE COLLATION											
IH18 B10C507487M3F4V5 T8 X26 EXTERNAL TANK											
RUN NUMBER	PHI	X/L	T/C NO	H/HREF R=1.0	H/HREF R=0.9	H/HREF R=0.85	HREF BTU/R FT2SEC	H BTU/R FT2SEC	QOOT BTU/ FT2SEC	TAW DEG. R	TCAL DEG. F
118	180.00	.35000	25.000	.1275	.1430	.1523	.4509-02	.5750-03	.5916	548.2	88.15
118	180.00	.37500	30.000	.1278	.1433	.1526	.4507-02	.5760-03	.6931	548.9	86.89
118	180.00	.40000	32.000	.4470	.5019	.5347	.4519-02	.2020-02	2.407	559.6	99.56
118	180.00	.42500	40.000	.8559	.9632	1.028	.4539-02	.3885-02	4.543	582.0	122.0
118	180.00	.45000	41.000	.5585	.6274	.6587	.4525-02	.2527-02	2.995	566.2	106.2
118	180.00	.47500	46.000	.3412	.3830	.4079	.4516-02	.1541-02	1.842	555.7	95.71
118	180.00	.50000	47.000	.2372	.2661	.2834	.4511-02	.1070-02	1.283	551.3	91.28
118	180.00	.52500	54.000	.2170	.2434	.2592	.4511-02	.9790-03	1.176	550.5	90.49
118	180.00	.55000	55.000	.1619	.1816	.1933	.4508-02	.7300-03	.8790	547.9	87.89
118	180.00	.57500	61.000	.1984	.2226	.2370	.4510-02	.8950-03	1.075	549.2	89.22
118	180.00	.60000	70.000	.2014	.2258	.2404	.4509-02	.9080-03	1.092	548.7	88.66
118	180.00	.62500	77.000	.1683	.1888	.2010	.4509-02	.7590-03	.6123	548.9	88.90
118	180.00	.65000	90.000	.1674	.1878	.1999	.4509-02	.7550-03	.9076	548.4	88.44
118	180.00	.67500	103.000	.1422	.1594	.1637	.4508-02	.6410-03	.7721	547.5	87.47